The Economy of Cluj

Cluj-Napoca and the Cluj Metropolitan Area
The Development of the Local Economy in the 2008-2018 Decade

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Cluj-Napoca/2021

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ISBN: 978-606-37-1044-5
https://doi.org/10.52257/9786063710445

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CONTENT

Acknowledgements 5
Introductions: A localized global economy 7

1 Localization of the Cluj Metropolitan Area economy **11**

Localization of the economy 12
Company demographics 14
Localization of employees 16
The daily movement of employees 18

2 The size of the economy **21**

The size of the local economy
The Gross Domestic Product 22
Gross Value Added 24
The economy of Cluj in European context 27
The knowledge-based economy 28
Public revenues 32
35

3 The structure of the economy **36**

Sectoral structure of the economy 37
Profits 39
Foreign trade 43
Start-up companies 45
Business infrastructure 47

4 The labour market **49**

Labour market structure 50
The specifics of the Cluj-Napoca economy 53
Ocupational categories 57
Labour productivity 59
Unemployment 61
Local Human Development 63

5 The Labout market in growth poles **65**

Professional and occupational categories in urban poles 66
Employees per activities in urban poles 68

6 An entreprenourial municipality **71**

List of data sources **76**
Integration of economic data **78**
References **80**

ACKNOWLEDGEMENTS

The research was financed by Cluj-Napoca City Hall, however, it does not represent its point of view. All the interpretations and data processing belong to the authors. We also thank Adrian Chircă, Diana Apan and Ovidiu Moldovan from Cluj-Napoca City Hall for their support and kind reviews.

Norbert Petrovici also received the grant UEFIS-CD TE PN-III-P1-1.1-TE-2016- 1691, 76/2018. Based on this funding, interviews were conducted with influential actors in the local economy, useful in building the categories of statistical interpretation and models of local economic processes.

The complex data transformations were made by Darie Moldovan. The authors benefited from the help of the research team formed by Alexandra Maria Drule, Ionuț Földes, Karina Săcuiu who have collected, cleaned, and processed data used in the analysis. Anca Chiş translated the text in English from Romanian. The visualization design was done by Alexandra Petrovici. The research was hosted by the Interdisciplinary Centre for Data Science at Babeș-Bolyai University. The authors benefited from the pertinent suggestions of the economists Cornel Ban and Cristian Litan, who reviewed the manuscript at various stages of the research.

The authors are also grateful to the economists Marcel Ionescu-Heroiu and Marius Cristea for the astute comments. The final discussion of the data incorporated the positions of Emilia Botezan, Stelian Brad, Ciprian Morcan, Bianca Muntean, Claudiu Salanţa, Ștefan Teișanu, Anamaria Vrabie, Rarița Zbranca, who were key informants for us, having a central positions in formulating public economic policies in Cluj-Napoca.

INTRODUCTION —

A GLOBALIZED ECONOMY

Over the last decade, globalization processes have intensified, and as such, global organizations relocated their secondary processes to new spaces specialized in operations (Peck 2018; Oshri, Kotlarsky, and Willcocks 2015). Most of the processes that are being externalized are Business Process Outsourcing (BPO) and Information Technology Outsourcing (ITO) (Oshri, Kotlarsky, and Willcocks 2015).

The global outsourcing hotspots are India, China and the Philippines, that concentrate over 80% of outsourced processes. At European level, Central and Eastern Europe has capitalized most of the outsourcing in the West, particularly in regards to German capital (Marin 2018; Dustmann et al. 2014). Almost half (45.4%) of the total foreign investments of German companies is outsourced to Central and Eastern Europe. In Romania 63.7% of the German foreign investments are processes that were outsourced to our country (Marin, Schymik, and Tarasov 2018).

As Peck (2018) points out, the logic behind the process is finding the cheapest labor force pools. Initially, outsourcing was focused on industrialized labor, however, now it is mostly skilled and highly skilled workforce that is being outsourced (Pavlínek 2019). Even if it is work performed by white collars, it has a high level of repetitiveness; however, in sectors such as IT there are also R&D operations (Oshri, Kotlarsky, and Willcocks 2015).

Cluj is an example of a city whose local economy and workforce composition changed dramatically after the 2008-2010 financial crisis. The city is one of the Central and Eastern European hubs that benefited from the globalization of outsourcing operations. In particular, Cluj-Napoca excels in four transnational fields: Information & Communications Technology, Business Support Services, Engineering, Research & Development and Financial Services.

In 2018, Cluj-Napoca was one of the most developed cities in the European Union in the GDP per capita group 19.000 – 27.000 at Purchasing Power Parity, cities that made a credible commitment at European level to promote knowledge, culture and creativity. In particular, participation in global production chains has generated the emergence of two types of internal markets:

— An internal market for the well-paid labor force employed in internationalized sectors that consumes a series of dedicated products and services: hospitality (restaurants, cafes, bars), food stuffs (meat products, pastries, premium alcoholic products), lifestyle services (hair salons , spas, gyms), cultural services (festivals, theatres, operas), location services (real estate services, interior design services, furniture manufacturing services).

— A set of markets that serve the global capital in reproducing their location (cleaning services, security, construction of type A office buildings, human resources).

Both domestic and internationalized markets are responsible for the impressive development of the city between 2008 and 2018. The GDP of the Cluj Metropolitan Area and the private revenues of companies have doubled in the last decade.

Key performance indicators: In the last decade all performance indicators have been on a significant upward trend. In Cluj-Napoca and the Cluj Metropolitan Area the growth rates between 2008 and 2018 were identical, namely 115% for the gross domestic product, 110% for the gross domestic product per capita, 171% for private revenues and 115% for the gross value added. Cluj-Napoca recorded the highest value of private revenues in Romania, apart from Bucharest, almost 61 billion lei in 2018. The municipal revenues represent almost 25% of the total amount recorded in the growth poles in 2018, apart from Bucharest. In the same year Timisoara ranked second in terms of economic performance, with revenues that represent approximately 77% of those registered in Cluj-Napoca.

Metropolitan dynamic: According to the performance indicators the importance of metropolitan localities increased throughout the decade, however, this was without affecting the performance of Cluj-Napoca. The Gross Domestic Product (GDP) and the Private Income (PI) grew both in metropolitan localities and in Cluj-Napoca.

However, for these indicators, the metropolitan localities accumulate 14% of the total Metropolitan Area. The metropolitan localities have recorded a modest 5% growth of the GDP and PI share in the last ten years, thus indicating a tendency to relocate some economic activities in these localities. The relocations concern, in particular, production, transport and logistics.

In 2018 Cluj-Napoca was one of the most developed cities in the European Union in the GDP/per capita group 19.000 – 27.000 at Purchasing Power Parity, cities that made a credible commitment at European level to promote knowledge, culture and creativity. Cluj-Napoca ranked 16th in terms of knowledge and creative economy.

However, the county is in the second decile group, at the bottom of the ranking. In 2017 the national share of the GDP per capita of the EU average was 32%, very similar to the figures registered by Cluj-Napoca (32.2%) and the Metropolitan Area (37.2%). Even though the volume of the local economy was lower than in the rest of the European regions, the Metropolitan Area gross value added was above the regional median in 2016. In the Cluj Metropolitan Area there are 21.2 thousand commercial companies. The business density is high at country level.

Number of companies: In the Metropolitan Area there are 48.2 thousand companies per 1.000 people. In Cluj-Napoca the business density per population is identical to the European average of 53.3 companies per 1.000 people.

New companies: In the last decade the annual average was 4.5 thousand new companies in the Cluj Metropolitan Area. On average, 77% of these were registered in Cluj-Napoca. In the last ten years, the average share of newly established companies of existing companies was 16%, well above the 9% European average. These tendencies suggest that the region has become a favourable economic environment.

A 'start-up' is a company whose annual revenue in the first three active years is at least 20%. In the last eight years, the metropolitan annual average was 129 'start-ups'. Only 3% of newly established companies became 'start-ups'. One in ten 'start-ups' has been active in the information technology sector. The average age of active companies in the Metropolitan Area has grown significantly in the last decade. The number of companies is increasing, and they also manage to stay active for a much longer period. The average age of active companies increased from 5.7 years in 2008 to 9.2 years in 2018.

Localization of the economy: The economy of the Metropolitan area is hyper-concentrated: most organizations are registered in the city centre, namely 16%, followed by the neighbourhoods Mănăștur, Mărăști and Gheorgheni in Cluj-Napoca. There were 239 thousand employees in the Metropolitan Area in 2018. The total number of employees in 2018 in Cluj- Napoca was 203.9 thousand. These figures represent the employees reported by organizations, regardless of their legal form or ownership.

Localization of employees: One in five employees in Cluj-Napoca commutes to work: 41.4 thousand people work in Cluj-Napoca but live outside the city. Most people commute from first ring localities, especially Florești. A very high percentage of 86% from the total active population living in Florești commutes to work, and 89% of the migration flow is directed towards Cluj-Napoca. Baciu ranks second with 51% of its active population commuting to work, and Apahida third with 46%.

Sectoral economic structure: Revenue in trade and services registered a significant growth, as such, in 2018 their share was 43.2% respectively 28.4% of the aggregate metropolitan revenue. The construction sector was relatively stable in the last ten years, with variations around the average of 10.2% of total revenues. Industry decreased from 25.5% in 2008 to 18.6% in 2018.

The service sector registered the most significant increase. In the last decade the average annual growth was 12.1% and revenues in services doubled. The newly created value in the service sector increased more than three times in the period analysed from 25% to over 35%. From the 203.9 thousand employees in Cluj-Napoca, 53.7% work in the service sector. The dominant sub-sectors in the private sector are those connected to global flows (outsourcing & offshoring):Information and Communications Technology Business Process Outsourcing, Shared Service Centres, Call Centres, Engineering, Research & Development.

In 10 years the number of employees in these sectors has increased four times, and the highest increase was registered in the Information and Communications technology sector that had 22.6 employees in 2018. Cities like Cluj-Napoca, Iași and Timișoara concentrate around 1.5-1.6% of the total population in Romania, with around 330 thousand inhabitants. Each of these cities concentrate between 2.9-3.8% of the total number of managers and 3.2-3.8% of the total number of specialists in the country (double or even triple compared to the share of inhabitants of the total population).

In Cluj-Napoca, Iași and Timișoara at least one in three employees is a specialist. In comparison, Cluj-Napoca concentrates the highest number of managers and specialists, after Bucharest. Most of the specialists in Cluj-Napoca work in outsourcing and offshoring.

The book has five sections, preceded by an introduction. In the first part we located the companies and employees in the Cluj Metropolitan Area. In the second section we evaluated the key indicators of the local economy: private revenues, public revenues, gross domestic product, gross value added. We then compared these indicators to the European values. In the third section we described the structure of the local economy by analysing and decomposing the key economic indicators by sectors. In the fourth and fifth sections we described the labour market, the economic activities in which employees are engaged and their occupations. We made a comparison between the local and national labour market, with emphasis on the growth poles in Romania. The last section is a discussion about the relations between the components of the local economy and the connection with the global economy starting from the concept of entrepreneurial state proposed by Mazzucato (2018).

Localization of the Cluj
Metropolitan Area Economy

LOCALIZATION OF THE ECONOMY

In 2018 there were 30.5 thousand active organizations in Cluj County, 78% of which were located in the Metropolitan Area and 64% in Cluj-Napoca. In the Cluj Metropolitan Area there are 21.2 thousand commercial companies, most of them located along the Someșul Mic corridor in Florești and Gilău.

— There is a high density of companies at country wide level. While only 2% of the total population lives in the Cluj Metropolitan Area, 4% of the total number of Romanian companies are located here.
— At metropolitan level, there are 48.2 companies per 1000 people, well above the national average of 27.7 but below the European average of 53.8. However, in Cluj-Napoca the density of companies relative to the population is identical to the European level.

Over 88% of the 19.7 thousand active organizations in Cluj-Napoca are commercial companies. The rest are NGOs and foundations (977), legal entities (422), sole traders (288), specialists with regulated professions (266) as well as state institutions (160).

— 16% of these organizations are registered at an address in the city centre. Most organizations are located here, as compared to other neighbourhoods and other localities in the Metropolitan Area.
— Most public institutions, as well as commercial companies are located in the city centre.
— If we exclude the city centre, most active companies are located in neighbourhoods according to density, namely in Mănăștur, Mărăști, Gheorgheni, Zorilor and Între Lacuri (more than 1000 companies are located here).

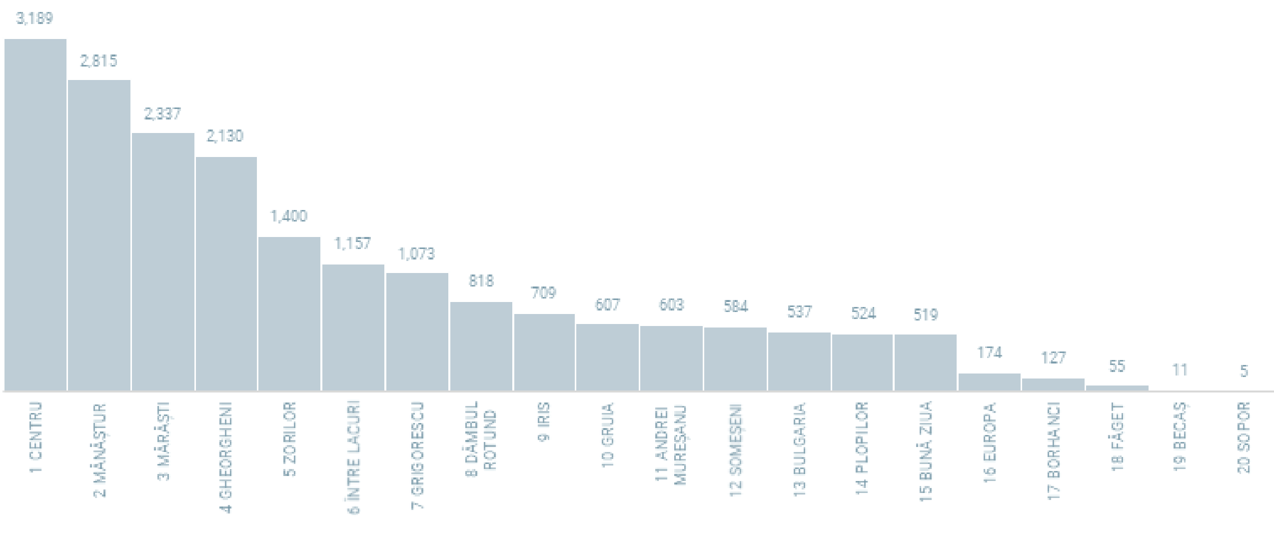
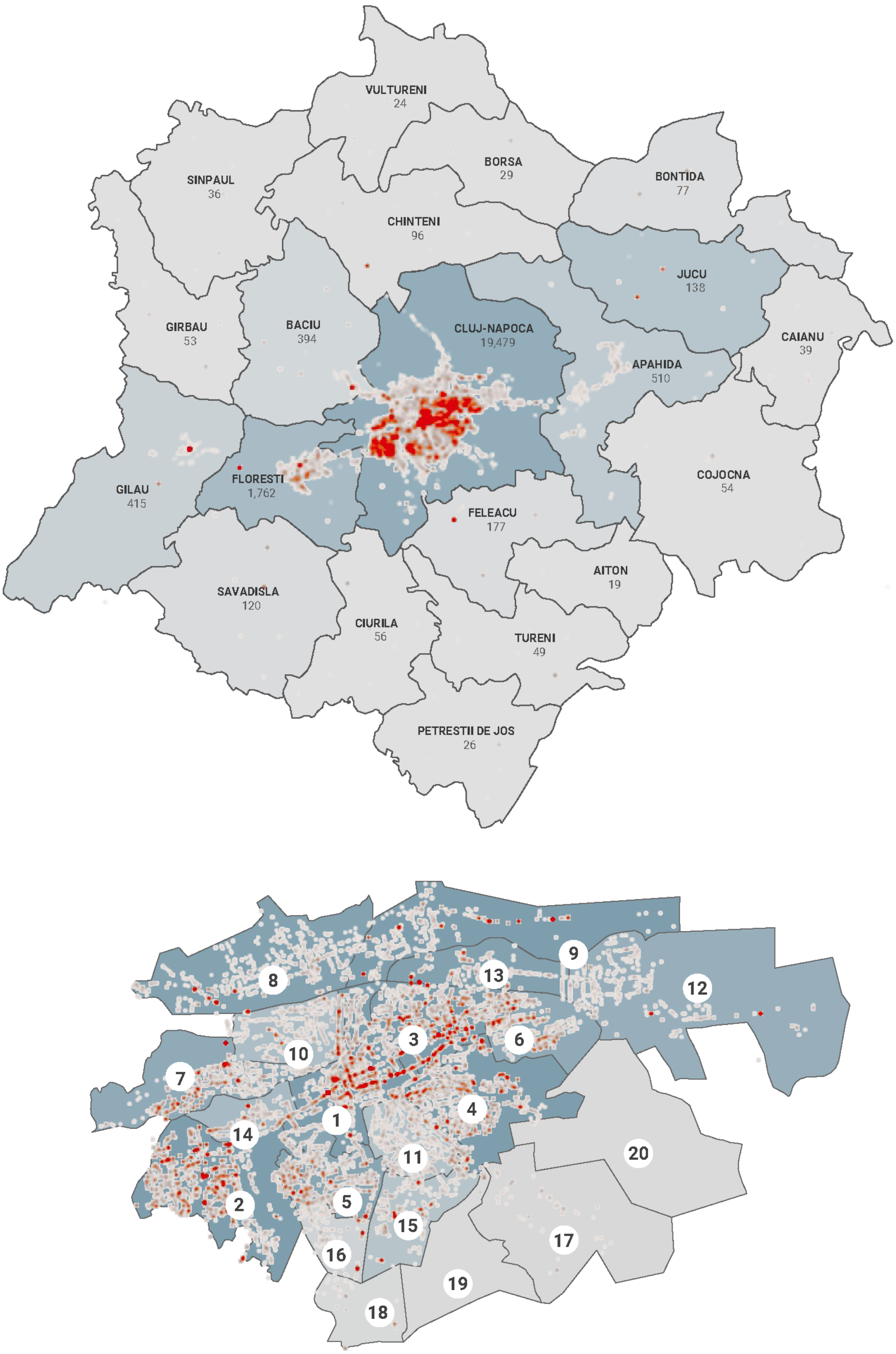


FIGURE 1

Number of companies in the Cluj Metropolitan Area and Cluj-Napoca, 2018

Data sources: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro;



COMPANY DEMOGRAPHICS

In the last decade, the annual average was 4.5 thousand new companies in the Cluj Metropolitan Area. On average, 77% of these new companies were registered in Cluj-Napoca.

——— In 2018, 3.6 thousand new companies were registered in Cluj-Napoca and 4.9 thousand in the Metropolitan Area.

——— In the last decade, 57% of the new companies in the metropolitan area were active on average in the first business year (they had employees and turnover). However, there is an upward trend: while in 2009 only 47% of new companies were active, in 2017 over 67% of new companies were active in the first year.

——— These are high numbers, compared with the national level. In the last decade 58.5 thousand new companies were established (9) which means that in the Metropolitan Area there is an annual average that represents 8% of the total companies in the country. In 2017, one in ten new companies was established in the Cluj Metropolitan Area.

——— In the last ten years, the average share of new companies compared to existing companies was 16%, well above the European average of 9% (4). These trends suggest that the region is an economically favourable environment as a business ecosystem.

In the historical dynamic there are several important processes for starting a business:

——— In 2002, the national economy started to recover, and this was also a turning point for new business in the Cluj Metropolitan Area. There was a historical peak in 2004 for the emergence of new companies, indicating a moment of economic optimism in the city.

——— After 2004, the peri-urban localities gradually became a distinct location for new business, and the trend is more pronounced after 2011: annually, a quarter of the newly established companies are located in metropolitan localities.

——— The second historical peak was in 2017, when 45% more companies were established compared to 2016. This rapid growth is due to the 'Start-up Nation' programme funded by the Ministry for Business Environment, Commerce and Entrepreneurship, which encouraged small and medium sized enterprises. Cluj-Napoca had the highest number of applications after Bucharest, and as a result, in the 2018 new financing wave, companies in Bucharest and Cluj-Napoca were discouraged to apply.

The average age of active companies in the Cluj Metropolitan Area increased significantly (statistically) in the last decade, with 3.4 years on average. Not only are there more new companies, but they also remain active for much longer.

While in 2008 the average age was 5.7 years in Cluj-Napoca, in 2018 it increased to 9.2 years. In 2018, over 75% of the companies located in the Cluj Metropolitan Area had been active for over 3 years, and 25% for more than 14 years.

FIGURE 2.
Number of new companies in Cluj-Napoca and the Cluj Metropolitan Area, 1990-2018

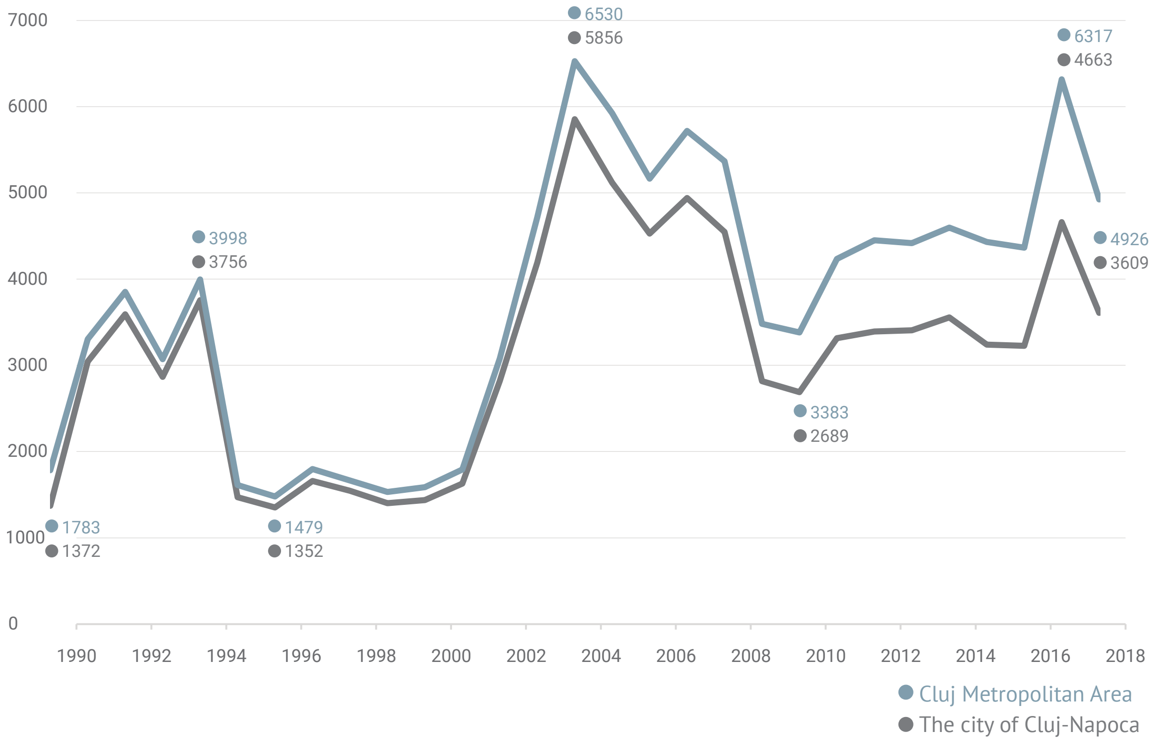
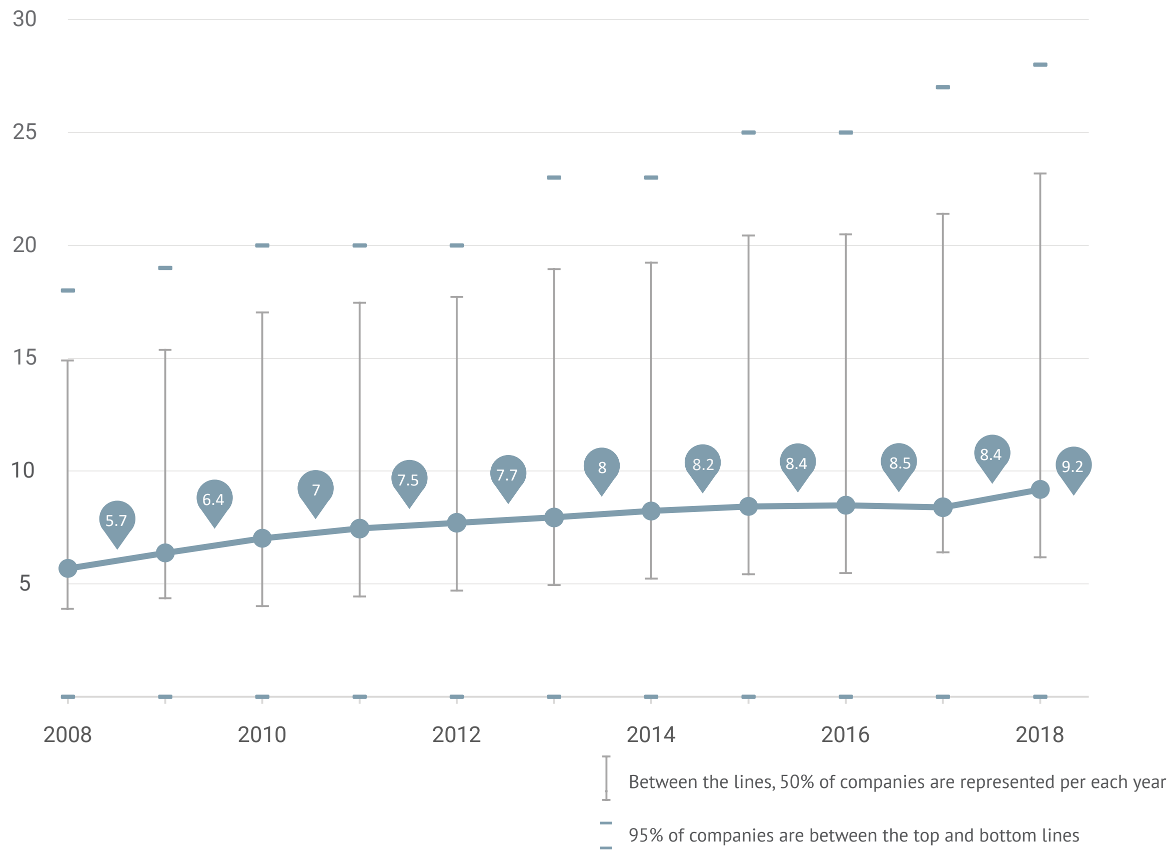


FIGURE 3.
Average company lifespan in the Cluj Metropolitan Area, 2008-2018



Data sources: Companies registered with the Trade Register up to 2018 and Companies cancelled from the Trade Register up to 2017, National Trade Register Office, Data.Gov.Ro; Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro;

LOCALIZATION OF EMPLOYEES

The employment to active population (18-62 years) ratio is unequally distributed, ranging from 8% in Căianu to 139% in Jucu. In 2008, the employed to population ratio in the Cluj Metropolitan Area ranged from 16% in Petreștii de Jos to 52% in Florești

Jucu concentrates a greater number of employees in the locality than the working age population. This is not surprising considering that the Tetarom III industrial platform is located here.

In **Florești** more than half of the residents are employed, while only one in five people are employed from the entire active population. The high number of employed residents is due to the large number of young people and young families living here, while being employed in the new metropolitan economy and commuting to Cluj-Napoca for work. In addition, in Florești there is a high percentage of unemployed rural population engaged independently in agriculture subsistence.

Cluj-Napoca has a 81.7% employment to active population ratio, and almost 50% employed to population ratio.

The population in Cluj-Napoca is diverse, which explains the discrepancies at the level of neighbourhoods in terms of employees.

27% of the total employed population (54.6 thousand employees) work for organizations located in the city centre. This figure does not necessarily represent the total number of employees who use the city centre daily for work. For example, the Babeș-Bolyai University, the Technical University and the Medicine and Pharmacy University are located in the city centre and they have 7.353 employees in total. In addition, these universities operate in over 100 buildings in the city and have extensions in other localities in Transylvania. However, the numbers indicate that most of the employees in the Cluj Metropolitan Area work in the centre of Cluj-Napoca.

In the last decade the new city economy was concentrated in Class A office buildings located mostly in Mărăști and Gheorgheni. Furthermore, more than one fifth of employees work in information and communications technology, support services for business and engineering, research & development.

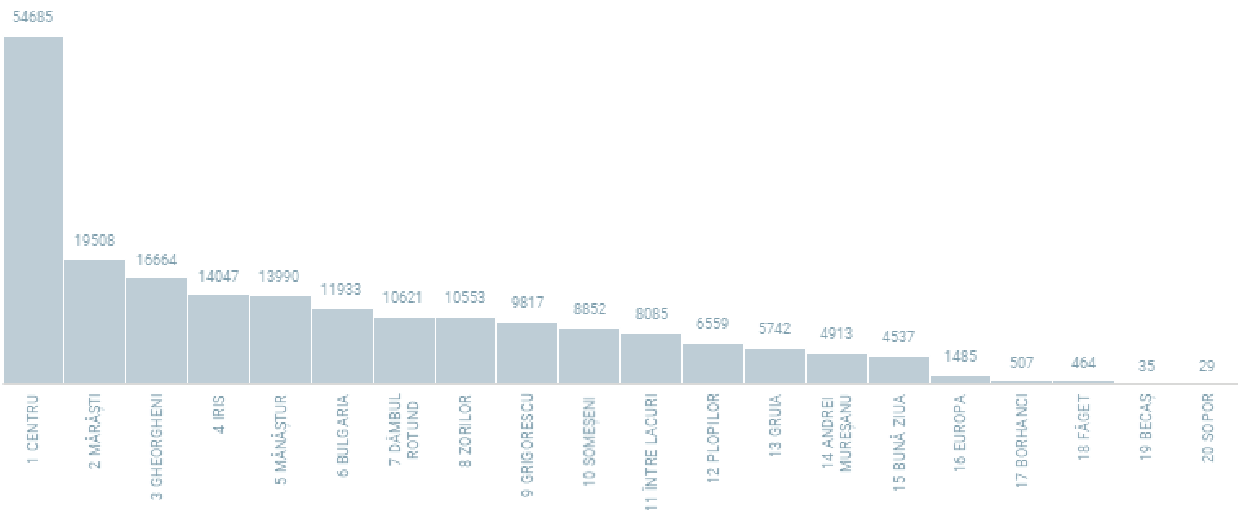


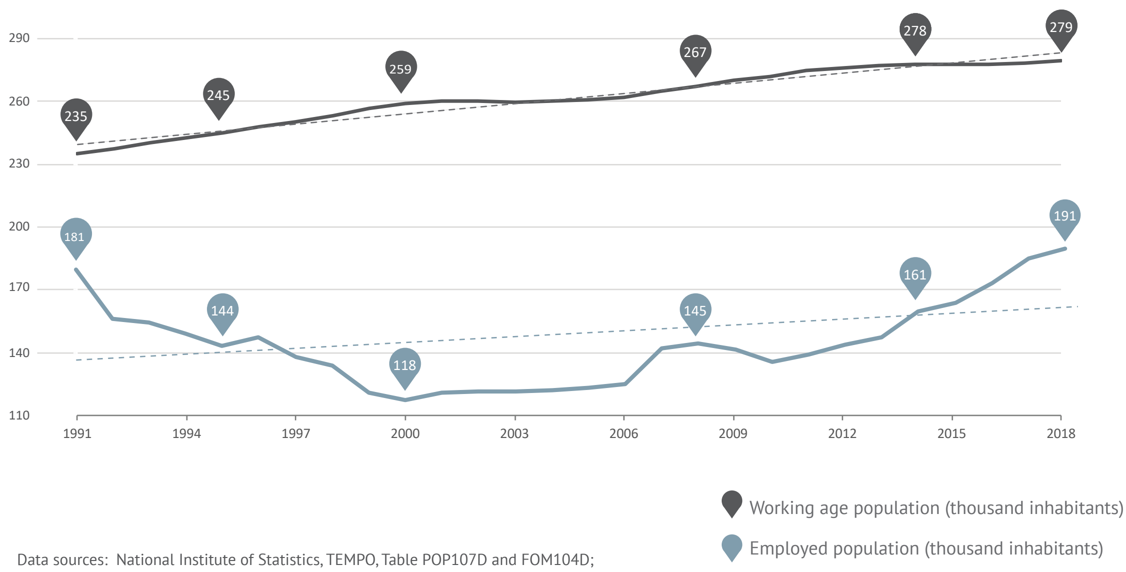
FIGURE 4.

Employees domiciled in the locality reported to the working age population in the Cluj Metropolitan Area, 2019



FIGURE 5.

Dynamic of employees in relation to the working age population and the economically inactive population, Cluj Metropolitan Area, 2008-2019



Data sources: National Institute of Statistics, TEMPO, Table POP107D and FOM104D;

THE DAILY MOVEMENT OF EMPLOYEES

At county and city level, one in five employees commute daily between their residence and their workplace: 41.4 thousand people work in Cluj-Napoca but live elsewhere. In 2018, Cluj-Napoca had 203.9 thousand employees. The figures are based on the number of employees reported by companies and not on the often inaccurate resident population (with a permanent or temporary address).

— 52% of employees that commute daily are metropolitan residents. At the same time 83% of commuters, namely 53.4 thousand employees work in the Cluj Metropolitan Area.

— 96% of the employees commute daily to work in a few metropolitan localities along the Someșul Mic corridor: Gilău, Florești, Cluj-Napoca, Apahida and Jucu. 78% of commuters work in Cluj-Napoca, the most popular destination. These localities serve as a conurbation in terms of the labour market.

In Cluj-Napoca, most people commute from first ring localities around the city.

— Most employees commute from Florești, where 86% of employees commute compared to the active population in the locality, and 89% of the migration flow is directed to Cluj-Napoca. This is due to the similar social composition of the two localities: 39% of the active population in Florești and 38% in Cluj-Napoca have tertiary education. These employees work in the city's service economy.

— A considerable proportion of the employees from first ring localities commute to work, however, the flow is not as strongly directed towards the city. A possible explanation is the social composition, as these localities are dominated by manual work-force.

— At county level there is a main corridor of manual labour between Dej-Jucu- Turda and a secondary corridor Aghireș-Gârbău-Baciu, historically one of main mining area in Cluj County. In the peri-urban localities, except Florești, commuting is directed towards companies that employ manual labour. After 2011, a series of companies relocated to the Metropolitan Area, along with newly established companies. Most of these companies operate in industry, transport, logistics and construction. Many companies operating in these sectors are located in Cluj-Napoca, however, the production and storage is located along the two corridors.

— In Cluj-Napoca there are two types of commuters: employees doing manual labour mostly in the industrial corridor and employees with tertiary education working as support staff in industry, transport and logistics. As a consequence, the Western part of the city has more workplace entrances while the Eastern part has more exits. The traffic flows are reversed at the end of the work day.

FIGURE 6.

Commuting employees that arrive in a locality and their share in the working population domiciled in the locality, in the Cluj Metropolitan Area, 2018.



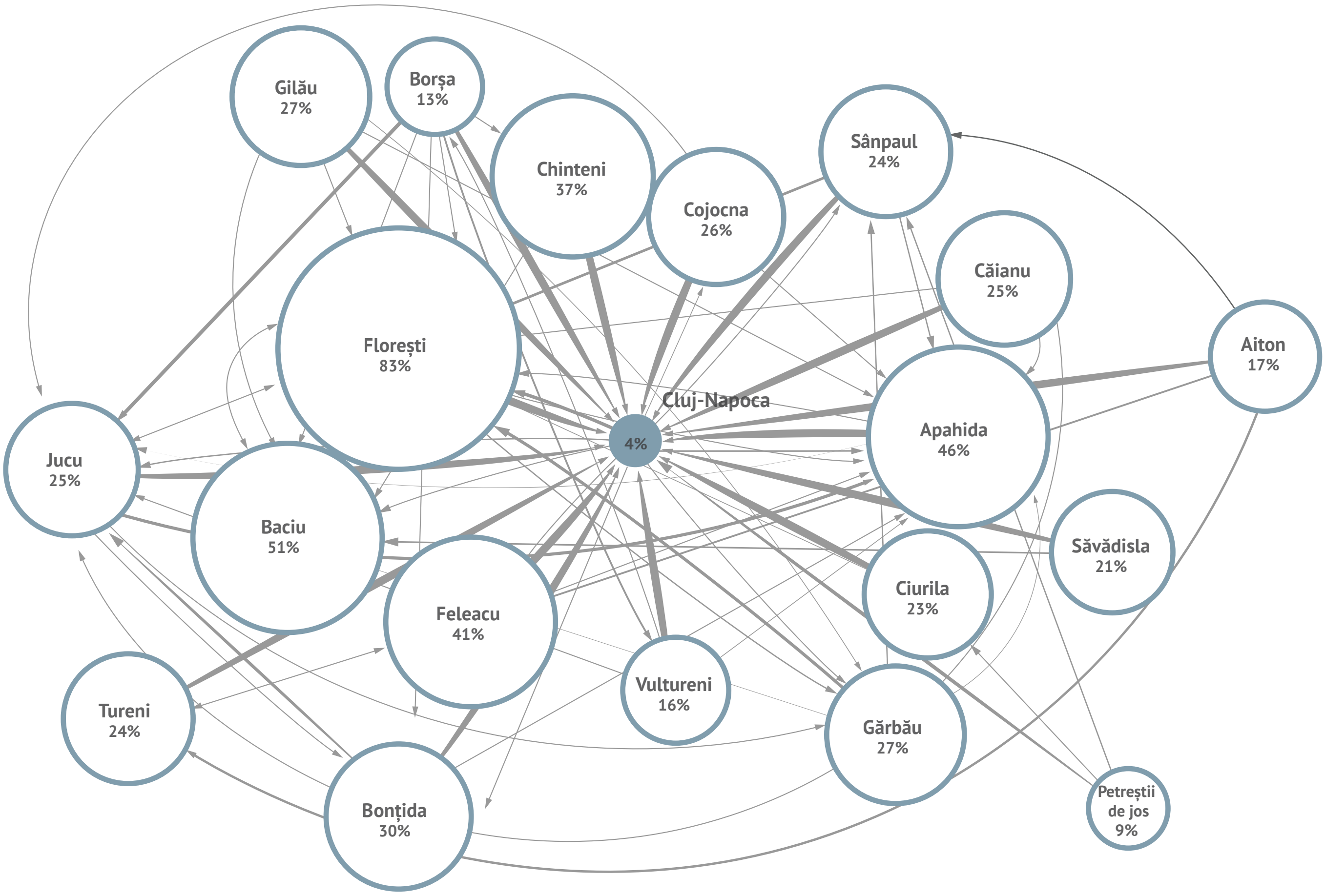
Data sources: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro; National Institute of Statistics, TEMPO, Table POP107D and FOM104D, 2018.

Technical data: The commuting employees that arrive in a locality are calculated as the difference between
(a)employees domiciled in a locality according to NIS data (FOM104D) and
(b)employees declared in the balance sheets of companies registered in the locality.

The data were transformed to prevent distortions generated by the manner in which companies are registered. The employees of a company registered in one locality can work in other company locations. For the top 20 employers, these figures have been adjusted on a case-by-case basis, based on the official company documents or telephone interviews with company employees.

The share of commuting employees arriving in a locality was calculated according to the working age population (18-62 years) in the locality, according to NIS (POP107D) for 2011.

FIGURE 7.
Employees commuting between localities in the Cluj Metropolitan Area, 2011



The size of the circle indicates the number of employees commuting from the locality in relation to the number of working age population (aged 18-62) in the locality.

The position of the circles is calculated to collectively minimize the tensions between the curbs that interlock the localities, using the Kamada-Kawai algorithm: the higher the proportion of people commuting from origin to destination the more similar are the localities.

10%
90%
The thickness of the line arrow represents the proportion of employees commuting from the origin to the destination locality.

Data sources: Data aggregated at folder level, Population and Housing Census, 2011, National Institute of Statistics, TEMPO, Table POP107D, 2011.

Technical data: Commuters are:
(a)employees domiciled in a locality but
(b)working in another administrative territorial unit (coding according to the superior locality).

The Size of the Economy

THE SIZE OF THE LOCAL ECONOMY

The turnover and the total revenue can help establish the size of a company. These two indicators are strongly correlated at company level and they are equal when no financial revenue and exceptional income are registered. By aggregating the company revenues at regional level we can estimate the size of the local economy.

The company turnover is the amount invoiced (sales) during a financial year, without the invoiced VAT. The source of this amount is the core activity amongst other activities.

The company revenue includes the turnover, financial revenues, exceptional revenues and various discounts granted to customers. The total revenue of companies is a more robust way to assess the performance and efficiency of economic activities.

Revenues generated in the private sector as a way of assessing the efficiency of the local economic activity reveal a significant upward trend in the period analysed.

In 2008 these revenues were almost 2 times higher than at the beginning of the period analysed (171%). Moreover, almost 88% of revenues were generated by Cluj-Napoca.

As various activities were relocated to metropolitan communes which grew in importance, this share decreased from over 93% in 2009 to 88% in 2018. Thanks to investments in infrastructure, companies were able to relocate various activities in the Metropolitan Area which in time became a regional economic unit. The lowest revenues were not registered in 2010 but in 2012. However, the share of private revenue at the level of metropolitan localities increased at a modest pace in the last ten years, by only 5%, thus indicating a trend of relocating economic activities in metropolitan localities. In 2018, metropolitan localities accumulated only 14% of the private revenue of the Metropolitan Area.

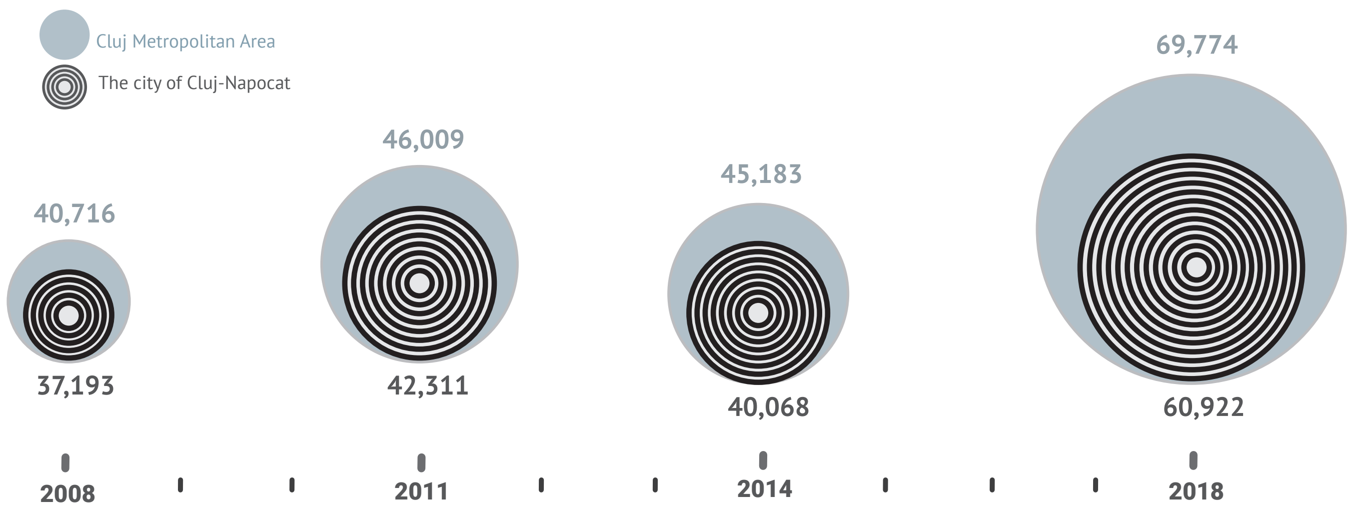
Due to the significant positive evolution of the local economy, in 2018, Cluj-Napoca registered the highest value of private revenues in Romania, except for Bucharest, almost 61 billion lei, 3 times more than Iași, the weakest among the growth poles.

It is clear that Cluj-Napoca has a better economic performance than the other growth poles in Romania. The city revenues account for almost 25% of the total amount registered by the growth poles in 2018. At the opposite pole is Iași with only 8%.

In the same year Timișoara ranked second with a share of almost 77% of the Cluj-Napoca revenues, while Brașov ranked 3rd, with a share of 62%. The other three growth poles, Constanța, Craiova and Ploiești had aggregate private revenues of approximately 47%-49% of the value registered in Cluj-Napoca.

FIGURE 8.

Evolution of private sector revenue in Cluj-Napoca and the Cluj Metropolitan Area, 2009-2018 (in million lei)

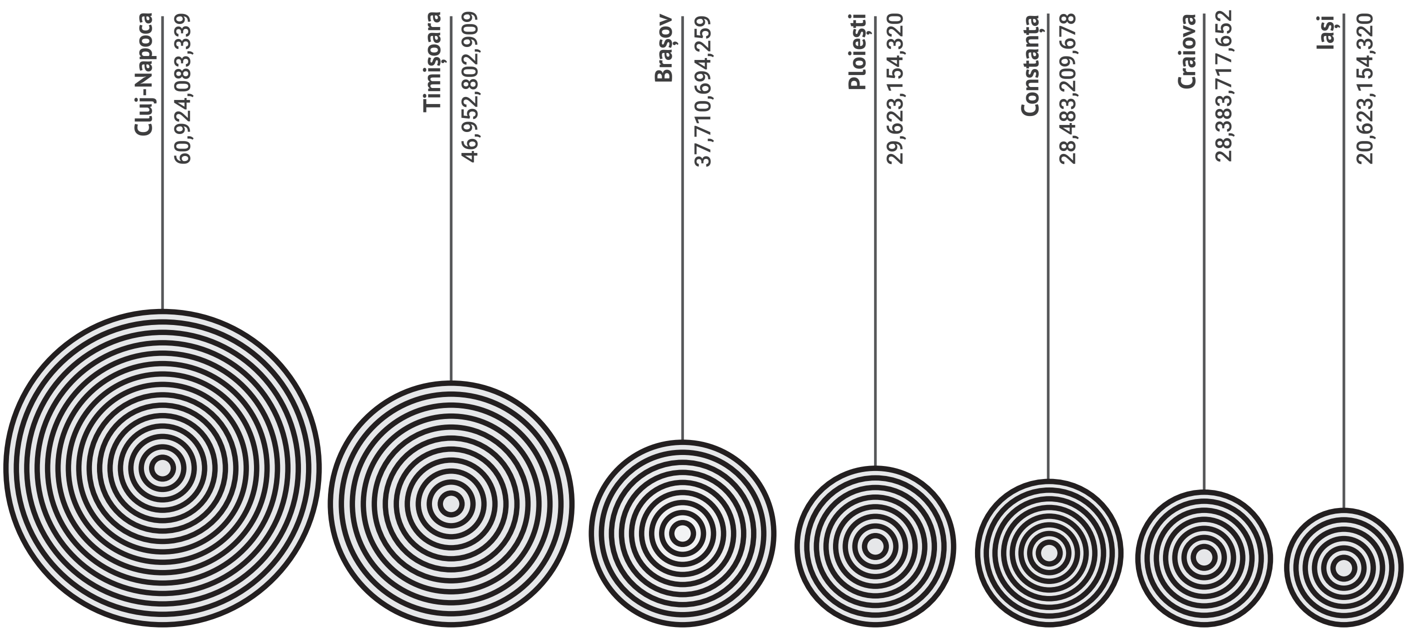


Data sources: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro;

Technical data: The total revenues of economic agents were aggregated according to headquarters.

FIGURE 9.

Private revenues in Cluj-Napoca and in the growth poles, 2018 (lei)



Data sources: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro;

Technical data: With the exception of Bucharest, as the capital has a totally different behaviour from the other growth poles.

THE GROSS DOMESTIC PRODUCT

At city level the GDP doubled, and its value was 33,674 million lei in 2018.

——— Moreover, the value of GDP per capita doubled, amounting to 47,854 lei in 2018. The highest growth rate was registered in the last three years with an annual growth rate higher than 10% for the period 2016-2018.

——— In the time period analysed, the only decreases were registered in 2010 when the global GDP in lei decreased by 1.1% compared to 2009 and the GDP per capita by 0.5%.

The metropolitan economy grew significantly in the last decade, both in million lei and per capita.

——— In the last decade the GPD in lei registered a 115% increase, and in 2018 it amounted to 39.3 billion lei.

——— The GDP per capita registered a 110% increase, and, in 2018, it amounted to 55,885 lei. The highest growth rate was registered in the last 3 years, with an annual growth higher than 11% for the period 2016-2018.

——— The only decrease was registered in 2010, namely 0.9% for the global GDP and 0.35% for the GDP per capita.

By comparing the evolution of the two indicators at Municipal and Metropolitan Area levels, we can conclude that they both registered a significant increase as the values doubled in the period analysed.

——— The Cluj Metropolitan Area registered higher growth rates than Cluj-Napoca (by approximately 10%).

——— In 2009 the difference was 11% and in 2018 it increased to 17%. The Metropolitan Area was less affected by the crisis and it registered lower decrease rates. Moreover, the Metropolitan Area growth rates are higher than those registered by the municipality.

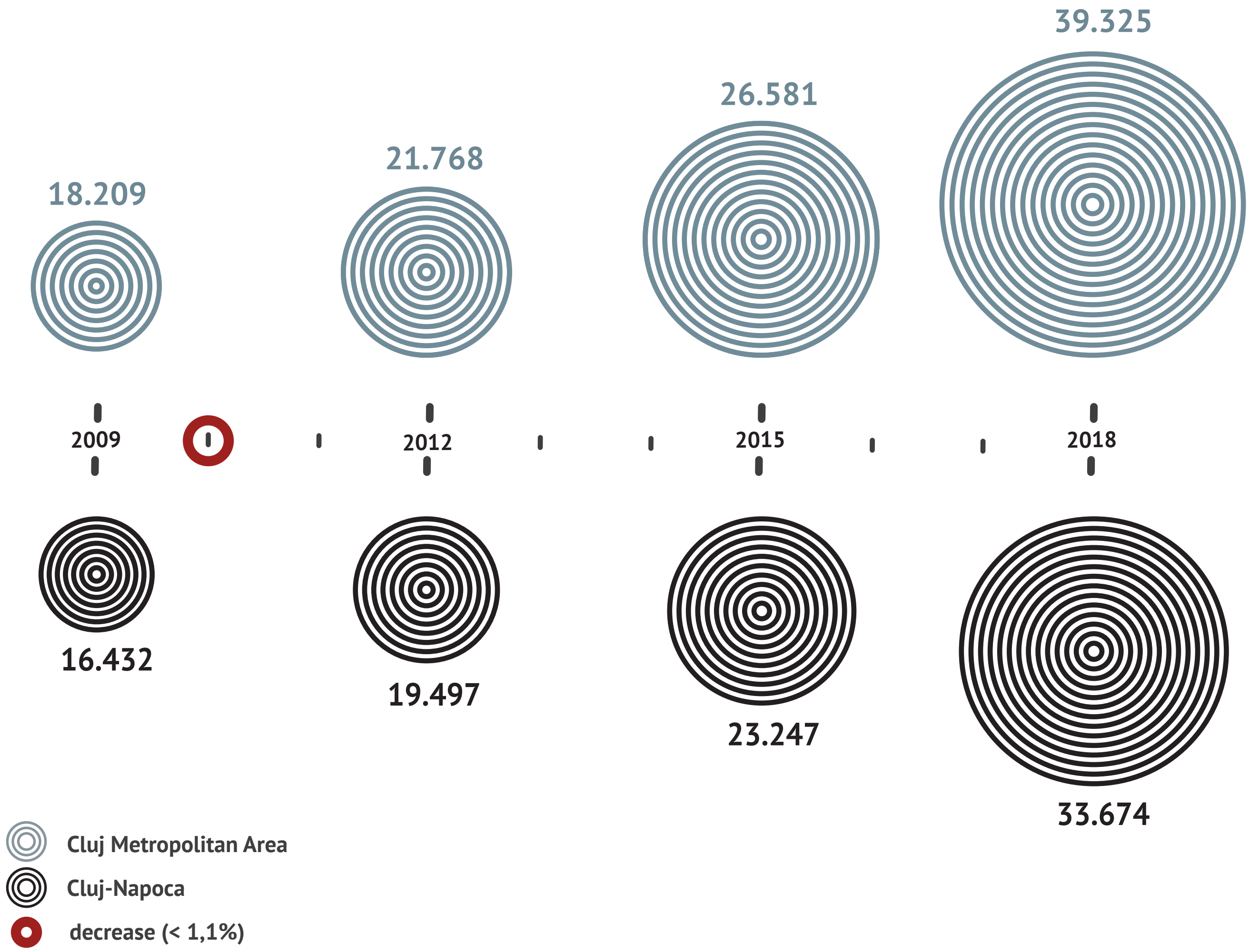
The values indicate a more intense development of the Metropolitan Area in recent years.

——— This can be explained by the fact that production units were extended or relocated outside Cluj-Napoca for cost-effectiveness purposes and due to the development of new industrial parks, both private and public.

——— Another explanation is related to the convergence theory according to which a Metropolitan Area (a certain type of union) tends to have a common balance where less developed areas, in this case metropolitan localities, register higher growth rates than the centre (initially in a much more developed state – the city of Cluj-Napoca)

FIGURE 10.

Estimated GDP in the Cluj Metropolitan Area and in Cluj-Napoca (million lei)



Data sources

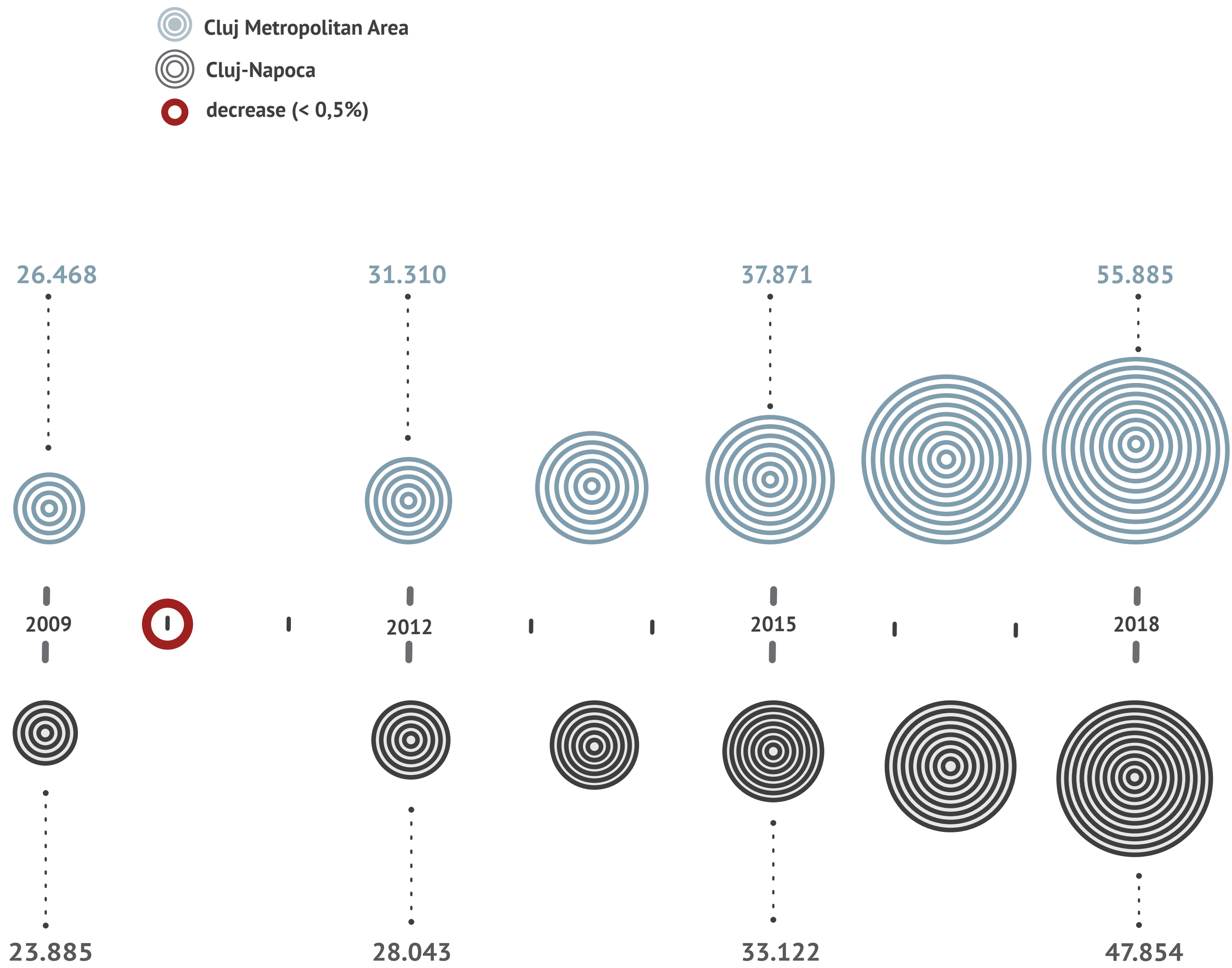
Data sources: The turnover per NACE codes, National Agency for Fiscal Administration Cluj; Balance Sheets of Economic Operators, 2008-2019, Ministry of Public Finances, Data.Gov.Ro; National Institute of Statistics, TEMPO, Table CON103I

Technical data

The GDP is a macroeconomic aggregate calculated at national and regional levels. It is not officially estimated at locality or metropolitan level. However, it represents the total product of the economic activities carried out in a certain space. Therefore, it is strongly correlated with the turnover and revenues of companies. Following this principle, we compared the county GDP with the turnover and total revenue of companies to estimate the GDP value in Cluj-Napoca and in the Metropolitan Area. For the analysed period, the county turnover was 84-87% in the Metropolitan Area and 74-77% in Cluj-Napoca.

FIGURE 11.

Estimated GDP per Capita in the Cluj Metropolitan Area and Cluj-Napoca (lei/inhabitant)



Data sources

The turnover per NACE codes, National Agency for Fiscal Administration Cluj; Balance Sheets of Economic Operators, 2008-2019, Ministry of Public Finances, Data.Gov.Ro; National Institute of Statistics, TEMPO, Table CON103I; Table POP7D.

Technical data

The estimated GDP by the population by domicile at the 1st of January at the level of administrative territorial units.

GROSS VALUE ADDED (GVA)

The Gross Value Added (GVA) represents the newly created value in an economy. It is the main component in the GDP formula based on production, together with taxes and subsidies on products. Unlike revenues, which are calculated as the level of economic operators, the gross value added is an estimate of the efficiency of the economic activity at aggregate level (district, regional or national). It contributes with approximately 90% to the formation of the Romanian Gross Domestic Products. As the GDP, the lowest spatial aggregation and calculation level for the GVA is the county level. The GVA estimation and forecast method is the same as the one applied for the GDP at the city and metropolitan level. The evolution of the gross value added in the local economy follows the same trend as the GDP at the Metropolitan Area level, namely there was a significant upward trend during the period analysed.

— The gross value added has doubled in less than a decade. The growth rate in the Metropolitan Area was approximately 115%.

— The growth rate in Cluj-Napoca was 104%, similar to other macroeconomic aggregates and lower than the Metropolitan Area.

— The evolution of this indicator also confirms an increased intensity of economic activities in metropolitan localities towards the end of the period analysed. This evolution highlights the effects of the relocation of activities from the centre, Cluj-Napoca, to metropolitan localities.
The gross added value growth dynamic had several sources:

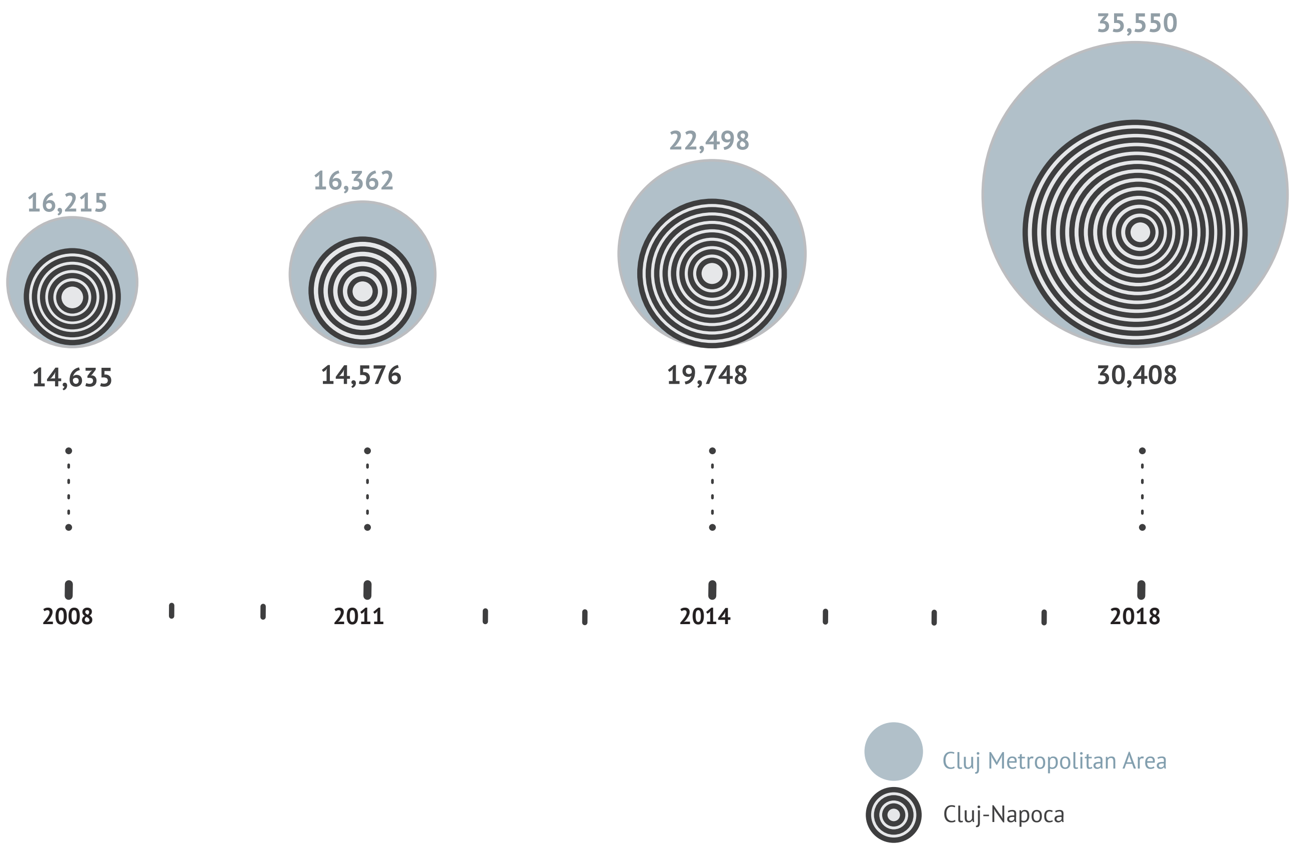
— Although Romania as a whole is a European destination for foreign direct investments using cheap labour, the local economy of the Metropolitan Area had a lot of investments in the service sector, which brings a higher gross value added.

— Additionally, the evolution of the local economy was different from that of most regions in Romania, which allowed a certain level of development and domestic capital. The biggest financial institution with Romanian capital, Banca Transilvania, is located in Cluj-Napoca.

The Gross Domestic Product and the Gross Value Added confirm the strong upward trend of the local economy in the period analysed. In addition, all three measures indicate the growing importance of metropolitan localities and their intense economic activities. Cluj-Napoca continues to be the engine of the Metropolitan Area and county.

FIGURE 12.

Gross value added in the Cluj Metropolitan Area and in Cluj-Napoca (million lei), 2008-2018



Data sources:
Gross Value Added (GVA) at basic prices by NUTS3 regions, Eurostat; Balance Sheets of Economic Operators, 2008-2019, Ministry of Public Finances, Data.Gov.Ro;

Technical data:
The smallest spatial aggregation level to calculate the Gross Value Added (GVA) is the county level. The GVA is one of the main components in the GDP formula based on production, as it represents the newly created value in an economy. Implicitly, the assessment method used for the GDP was also applied to estimate the GVA at city and metropolitan area level.

THE ECONOMY OF CLUJ IN EUROPEAN CONTEXT

In European context the local economy can be placed at county level, the lowest territorial aggregation level applied by the European Union.
As we have shown, approximately 85% of the GDP, GVA and revenues is achieved at the level of the Cluj Metropolitan Area, however, the position of the local economy at EU level becomes more clear if we make an evaluation at county level.

Romania is, by far, one of the weakest performers among EU members. A regional assessment shows that the performance of the local economy in Cluj is much above the overall country performance. Cluj is one of the best EU performing counties in the Balkan area, both in terms of GDP per capita and GVA.

——— Cluj had the highest GDP per capita in 2016, namely 11,400 euro, after Bucharest. In this ranking the county is in the second docile group with about 18% of NUTS3 units having a lower GDP per capita.

——— In terms of Gross Value Added, there are regions even in older EU member states, such as Spain, Germany or France, that registered much lower values than Cluj in 2016. Thus, based on this indicator, Cluj County is in the 6th decile group. In 2016, more than half of the European territorial units at this level had a lower GVA than Cluj.

——— If we look at the spatial distribution we notice that the economic performance is comparable not only to many Central-Eastern European regions (which Cluj outranks), but also with regions in older EU member states. There are higher discrepancies in terms of GDP per capita as the newly created value in the Cluj economy is relatively high.

Globally, at EU level, there is a greater discrepancy between Eastern and Western states in terms of GDP per capita per regions, compared to the GVA. This can be explained if we look at the difference between subsides and taxes which impacts the GDP, as these differences also exist in between members states and not only between them. In Cluj, there is a bigger GDP discrepancy compared to other counties in Romania, than to Western European regions. In terms of GVA the Cluj economy is in a good position, thanks to the specificity of the local economy, which relies heavily on IT or the Health sector, which brings a much higher gross value added.

——— From 2011, Romania was on an upward trend in terms of GDP. The same evolution was registered in terms of the locally estimated GDP for the Metropolitan Area and for Cluj-Napoca. However, thanks to the specificity of the local economy, it had a better economic performance than the national economy, with annual increases over 10%.

——— Therefore, in 2017, the share of the GDP per capita in the EU average at local level was higher than the 32% national share: 32.17% for Cluj-Napoca and 37.23% for the Cluj Metropolitan Area. In the same year the GDP per capita at county level was 43.44% of the EU average.

FIGURE 13.
Distribution of the gross value added at the NUTS 3 level in Europe, 2016

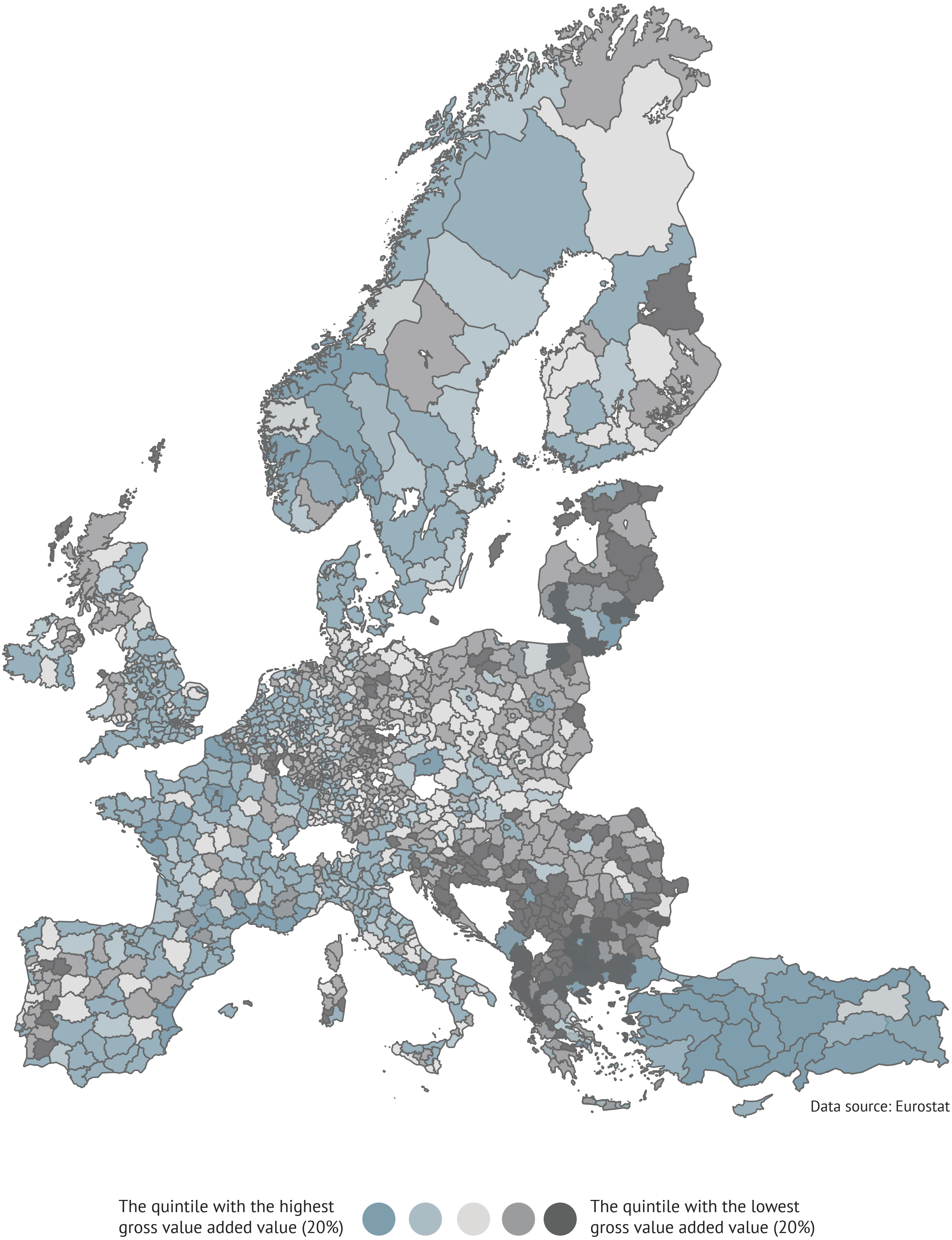
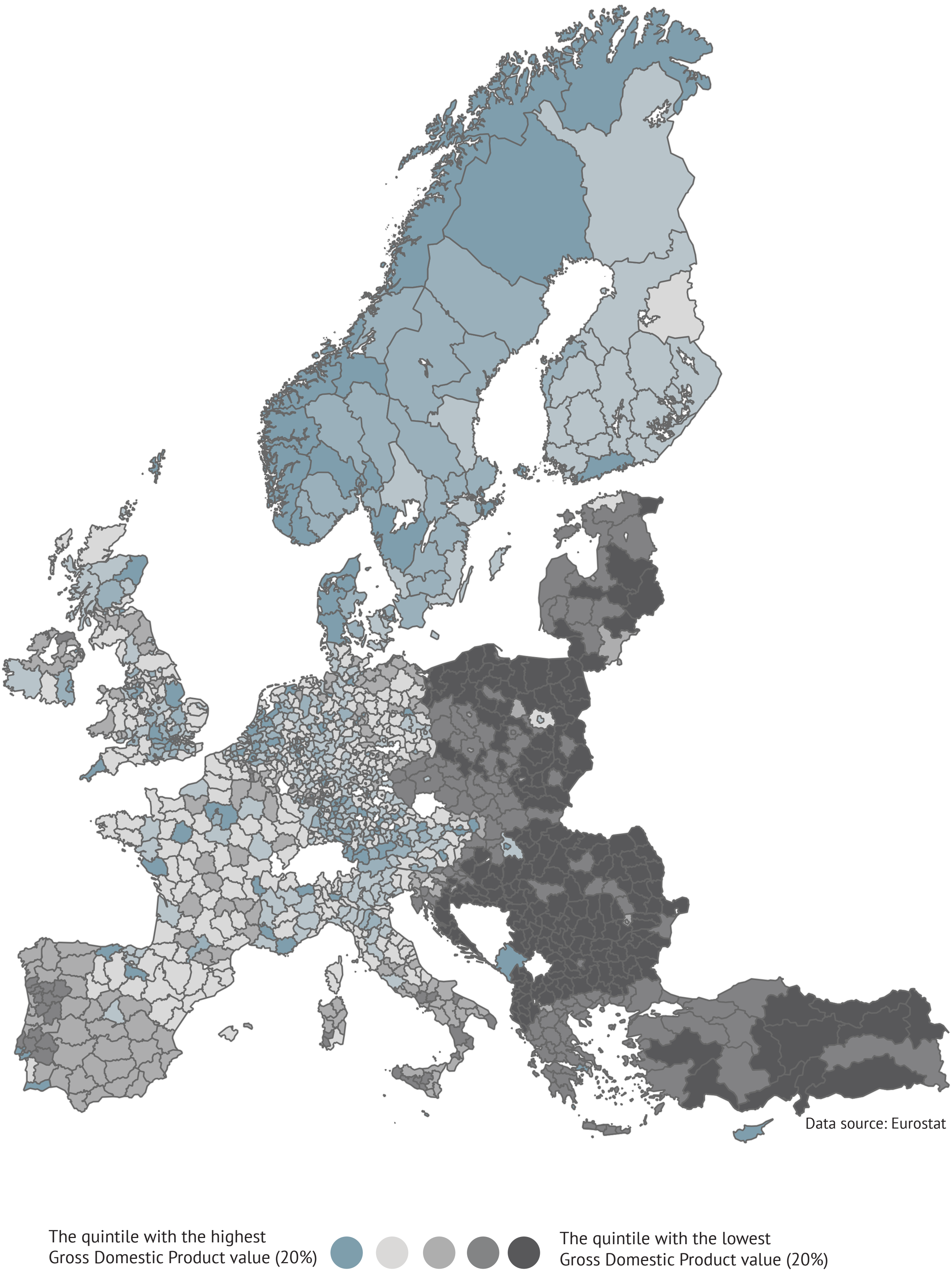


FIGURE 14.
Distribution of the Gross Domestic Product at the NUTS3 level in Europe, 2016



THE KNOWLEDGE-BASED ECONOMY

'Creative Economy' is a concept designed to combine the specificities of economic activities related to creativity and knowledge-intensive activities. The Creative Economy evaluates the impact and contribution of the knowledge and creative sector in terms of employment, innovation and job creation and it is a composite index consisting of 3 groups: (a) new jobs created in the creative sector, (b) intellectual property and innovation, (c) jobs intensive in creativity and knowledge. Within the EuroStat index system, it defines one of the three dimensions of the creativity index in the EU, however, the indicator is relatively independent and it evaluates the size of the knowledge sector within the local economy.

Ranking is done by grouping the cities to ensure compatibility. From an economic point of of view Cluj-Napoca is in the 19.000 – 27.000 PPP GDP per capita group.

— Cluj-Napoca ranks 16 out of 50 cities with a global creative economy score of 19.8. The global performance is lower than the group average. Cluj-Napoca ranks immediately after Athens and Liverpool and is followed by Limoges and Katowice. Cities such as Birmingham and Valencia rank much lower in terms of global performance.

— The best performance was registered for the newly created jobs in the creative sector – 9th place with a score of 31.4, well above the group average of 23.2. This performance is due to the fact that, in the period analysed, an average of 76.1 (per 100.000 people) new jobs were created in new arts, culture and entertainment enterprises, together with 111.4 in new media and communication companies and 207.7 in new companies operating in other creative sectors. The best group performer was Krakow, with a score of over 60 points, triple the group average and almost double the score of Cluj-Napoca.

— In terms of creative and knowledge-intensive jobs, Cluj-Napoca ranks 28, with Porto and Manchester as leading performers.

— The city registered its weakest performance in terms of intellectual property and innovation, ranking last in the GDP group, with a score of only 0.7 compared to the 18.2 average. In the period analysed by the European Commission, the city registered only 3.32 patent applications and only 2.85 applications were developed for the community (per 100.000 people). This ranking shows the specificity of the local market, characterized by outsourcing, especially in IT services and innovation. On this account, the final products of research, development and innovation activities are not registered locally, but at the location of the parent company.

FIGURE 15.

Distribution of the Creativity Index in Europe, 2018



Data sources: Eurostat

PUBLIC REVENUES

In the last decade, Cluj County always ranked in the top counties with the highest local government revenues, however, it ranked first among secondary cities only in 2018. The local government revenues are the amounts that the mayor's office has and can use in the environment it manages.

Bucharest, as the capital, has the leading position, with a local budget about 5 times higher than those of the best performances.

According to the National Institute of Statistics, in 2018, the revenues of local budgets in Romania were over 57,000 million lei, about 9% less than the previous year, while Bucharest registered over 9,400 million lei (an increase of about 5% compared to 2017), while Cluj ranked second with 2.156,5 million lei (over 8% decrease compared to 2017).

The decrease of local budgets countywide is due to some changes in the national legislation with regards to the allocation of public revenues starting with 2017. The Municipality directly keeps a small part of taxes on local private income and no longer distributes directly part of the public sector wages.
Cluj County also ranked second, after Bucharest, in terms of budgetary expenditures in 2018. Due to the legislative changes, public expenditures also decreased by 4% compared to the previous year.

Cluj County started to register a budget surplus beginning in 2013. From all counties in the growth poles, only Dolj and Cluj County registered budgetary surpluses in 2018, namely 4.3 million lei and 22.4 million lei. Brașov, Iași, Constanța, Prahova and Timiș counties registered budgetary deficits in the financial year 2018.

At the beginning of the period analysed, the total revenues of Cluj Napoca Municipality totalled about 610 million and 730 million lei at metropolitan level.

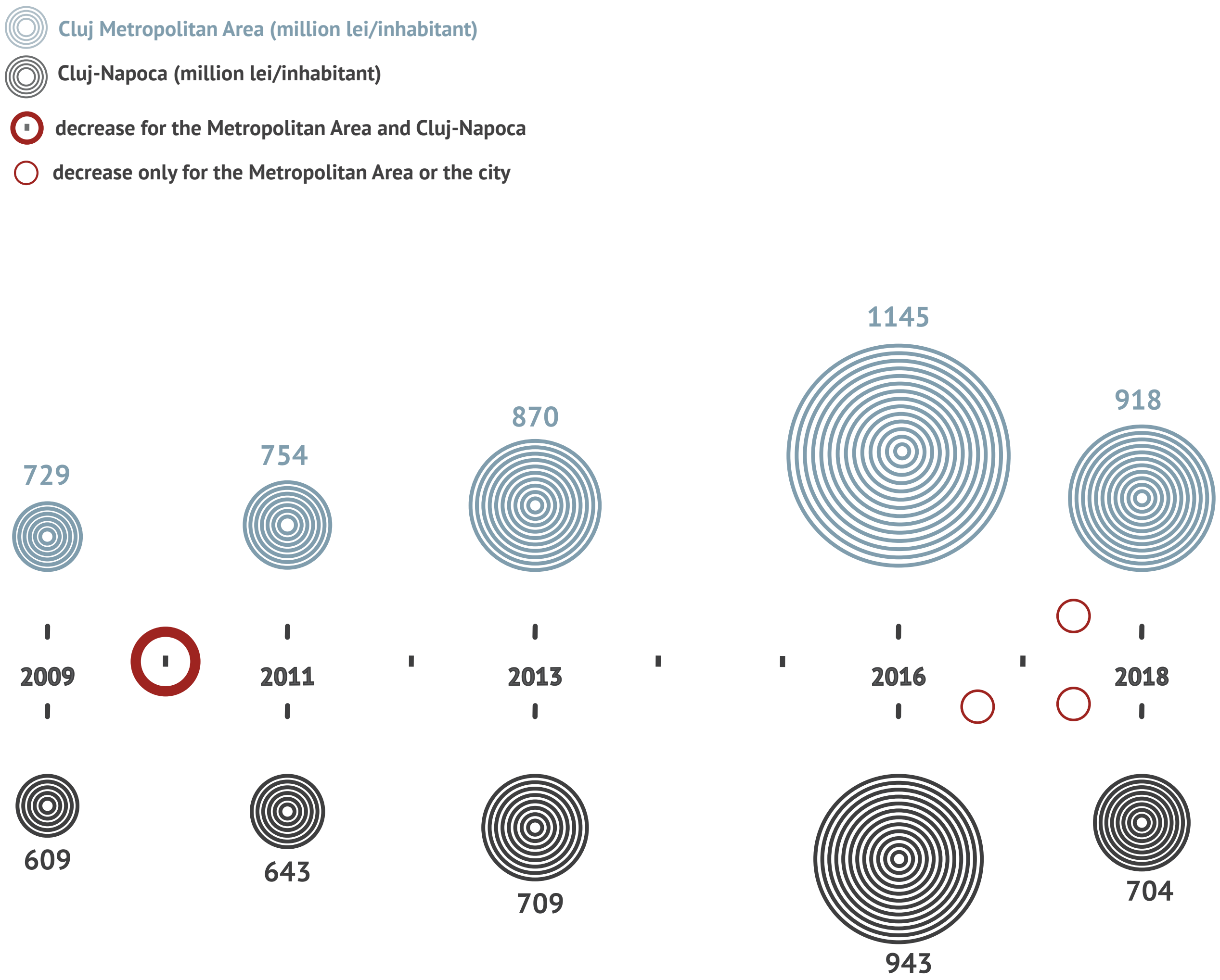
The international financial crisis also impacted this indicator and in 2010 the lowest value was registered. From 2011, there was a progressive positive evolution at the municipality level and up until 2016 the total revenues increased by more than 50%.

Regarding the Metropolitan Area, until 2017 there was a 60% increase, however with the legislative changes there was a sharp 20% decrease in 2018.

The revenue per person ratio reveals the fact that, throughout the period analysed, the Cluj- Napoca Municipality disposed of a significantly higher per capita amount than the average aggregate value at metropolitan level. The lowest level of revenue per capita (1.758 lei/capita at metropolitan level and 1.855 lei/capita at city level) was registered in 2010. The highest amount per capita available, registered in 2016, was 2.902 lei/capita in Cluj-Napoca and 2.714 lei/capita in the Metropolitan Area, 65% respectively 46% more than in 2010.

FIGURE 16.

Total revenues of municipalities in the Cluj Metropolitan Area and in Cluj-Napoca 2009-2018 (million lei)



Data sources: Municipal Budget Executions taken from the web pages of each municipality in the Cluj Metropolitan Area, 2018

Technical data: The sources of local revenues are local taxes, income tax from residents, economic agents and public institutions and other payments. The Gross Domestic Product is an aggregation of economic activities in a certain area.

Some of these amounts return to the local economy as taxes. Using the information provided by the metropolitan municipalities regarding the budget executions we calculated the total revenues of each locality.

The Structure of the Economy

SECTORAL STRUCTURE OF THE ECONOMY

If we breakdown private revenues by major business sectors we see that the share of revenues from trade and services increased significantly, amounting to 43.2% respectively 28.4% of the total aggregated metropolitan revenues in 2018. The share of the construction sector was relatively stable over the last ten years, with variations around the average of 10.2% of total revenues. The industry is on a downward trend as it went down from 25.5% of total revenues in 2008 to 18.6% in 2018.

——— The service sector registered the highest increase as share in local economy revenues. In the last decade revenues have doubled, with a 12.1% average annual growth. The only exception was registered in 2011, when the sector's revenues contracted by 20%. The 2008 International Financial Crisis impacted on this sector and the city of Cluj-Napoca. These values can help build an anticipation horizon on the impact of a possible contraction of the global economy in the next decade.

——— The trade sector had an average annual growth of 9.6% in the last decade, with the exception of 2009 when the sector's revenues contracted by 16%. The effects of the 2008 economic crisis were also felt this year.

——— The construction sector is the most unstable. After a 16.2% contraction in 2014, revenues increased by 30% in 2015, with no further increases in 2016. To a large extend these variations are due to the structuring of the sector: in 2018, 183 companies with at least three employees achieved 10% of the revenues and 28% of the profits in the sector. These companies operate as service providers and intermediaries; therefore, they should be classified in the service sector. In addition, the revenues are affected by the completion pace of major construction projects.

A breakdown of the Cluj Metropolitan Area gross value added, shows that all major activity sectors registered increases over time. In addition, it reveals that the specificity of the local economy is trade and services. At present, these two sectors account for more than 70% in the new value creation local economy, while agriculture accounts for less than 1% despite the fact that it increased by more than six times.

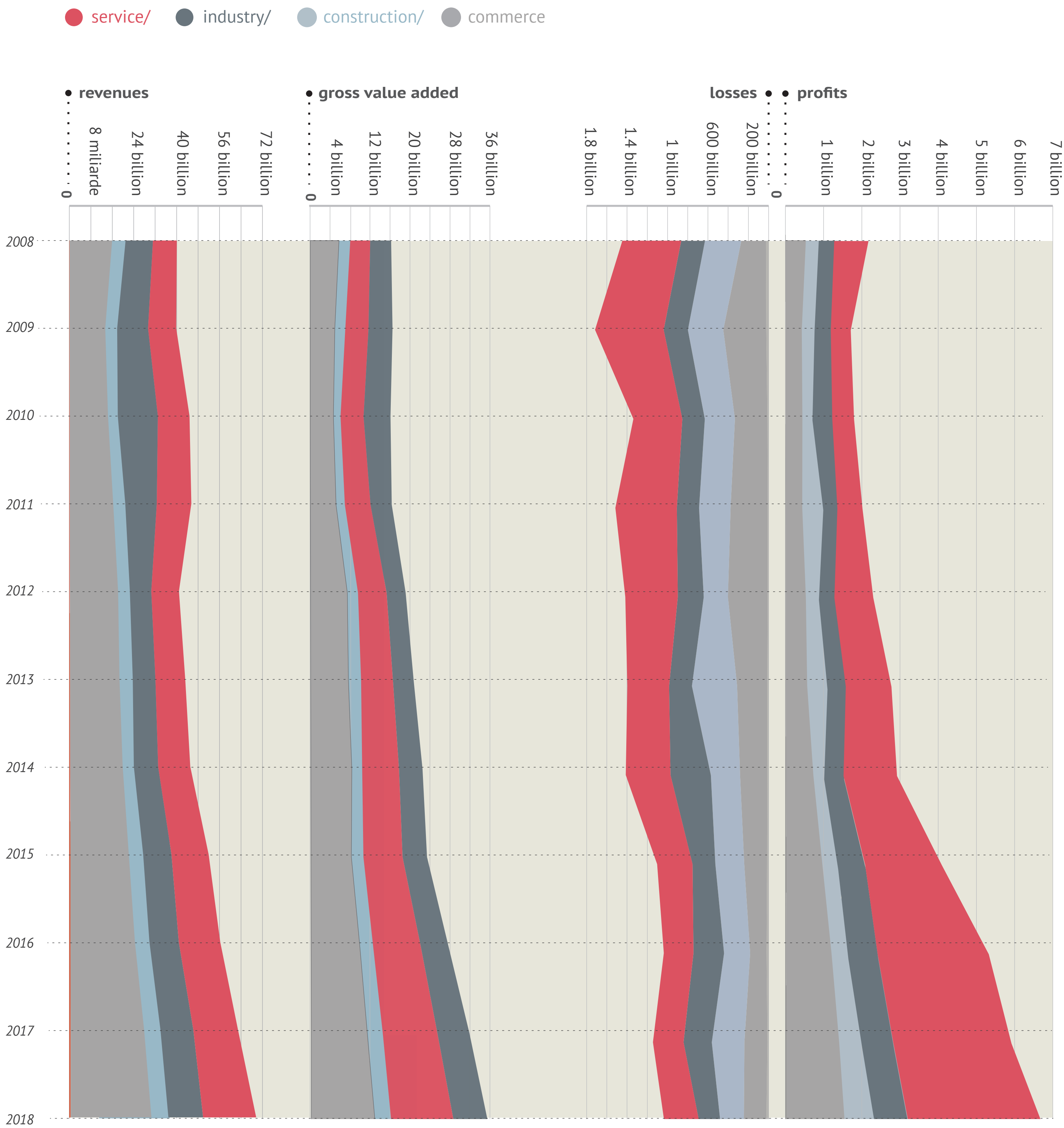
——— Trade had a relatively constant share of around 35-36%, with the most significant decrease during the crisis (2009, 2010) when the share dropped to 29%. The highest gross value added of almost 6000 million lei was registered in 2008, while the growth rate was about 120% by 2018.

——— Not surprisingly, the most obvious evolution was registered in the service sector. This sector started from a much lower level than trade (approximately 4.000 million lei, 30% less than trade) however, in 2018, it produced the same gross value added (over 12.500 million lei). The new created value in the service sector tripled in the period analysed, from a share of 25% it reached over 35% in the total economy.

——— Due to the evolution registered by services and trade, sectors such as construction and industry now have a decreased importance in the local economy, from a share of over 13% respectively 25% in 2008, to 9%, respectively 19% in 2018, although in absolute terms they also registered increases.

FIGURE 17.

The dynamic of revenues, gross value added, profit and loss by economic sectors in the Cluj Metropolitan Area, 2008-2018



Data sources: Gross Value Added at basic prices by NUTS3 regions, Eurostat; Balance Sheets of Economic Operators, 2008-2019, Ministry of Public Finances, Data.Gov.Ro;

Technical data: We aggregated the revenues, debts and profit of companies at metropolitan level and then disaggregated them by sector using the NACE codes. The Gross Value Added is reported at county level (NUTS3) by activity; we disaggregated the data in proportion to the aggregated turnover at metropolitan level by economic sector.

We classified the activities of economic sectors in accordance with the European classification. Therefore, transport and logistics were aggregated with trade.

PROFITS

Profit, even if it measures the efficiency of a company, does not allow for cross-sectoral comparisons because of different business models. The captive centres aim to reduce costs, while transnational retail companies aim to profit from high turnover. However, we can evaluate economic activities in terms of performance within a sector for 2018.

— Services: in 2018 the most profitable activities in the Cluj Metropolitan Area were financial services and insurance (36%) and information & communications technology (24.2%). If we exclude Banca Transilvania, the subsector hierarchy changes, and information technology achieves 30.3% of profits and financial services 20%.

— Trade: the most profitable subsectors are: fuel trade (24%), transport (14%), cars and auto parts (11%) and construction and production materials (10%). Mol Romania dominates trade with a share of 15% of the aggregate sector profit.

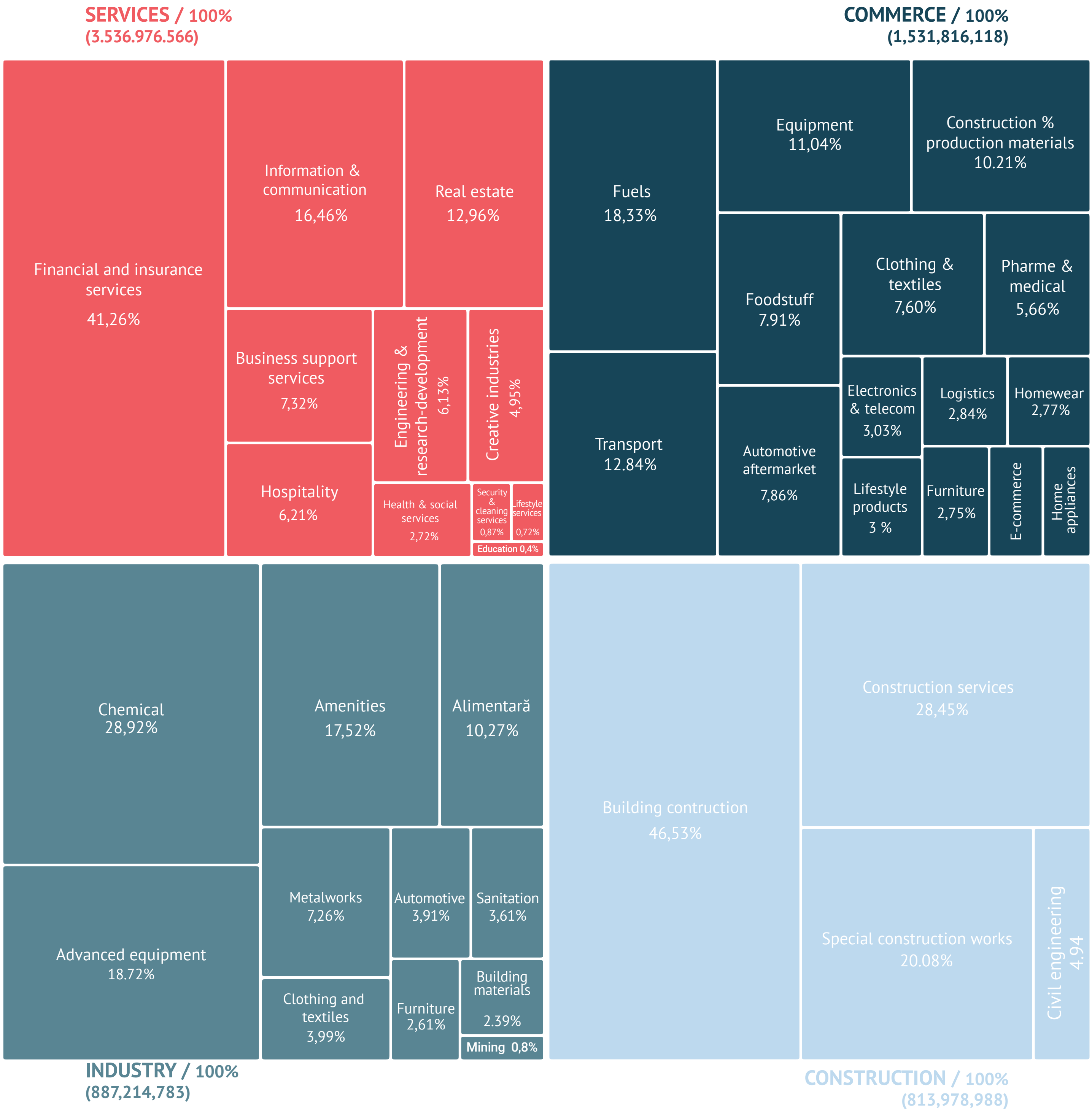
— Industry: the advanced machinery subsector makes a quarter of the sector profits. Most of the industrial companies are connected in continental production flows of auto parts, such as the chemical industry manufacturing plastic auto parts (16.7%), metal products (10.7%) and automotive.

However, we can make cross-sectoral comparisons using profits, if we report them to the number of employees and the invested capital. We will use the first option, namely we will report profit to the number of employees as it allows a more accurate assessment of the contemporary mechanisms for value formation: knowledge, reputation, relations and other intangibles generated by the skills and talent of employees. Cluj-Napoca has a service-oriented economy and the profit per employee allows a more precise assessment of the subsectors in terms of these types of intangible assets.

— In their business model, companies in the Cluj Metropolitan Area can opt for a balanced ratio between invested capital and human resources or they can choose to substitute one element with the other. This decision generates a series of substitution curves. At one extreme, we have companies offering construction and real estate services, which have a very small number of employees and very high profits. At the other end of the curve, we have automotive industrial companies that employ a lot of people to perform manual labour.

— The companies that do not enter the substitution curve and have different business models are: financial sectors, utilities and fuels. These subsectors are dominated by one or two large companies with big market shares and many employees. The most profitable companies operate in the three key globalized service sectors: information & communications technology, business support services and engineering & research-development and they employ high-skilled workers. Overall, the industrial sector employs more people to make profit (40 employees on average), while commercial sectors have less employees (8 employees per company on average).

FIGURE 18.
Structure of profits by activities in the Cluj Metropolitan Area, 2018



Data sources: Balance Sheets of Economic Operators, 2008-2019, Ministry of Public Finances, Data.Gov.Ro;

FIGURE 19.

Distribution of profit per employee by economic subsectors in the Cluj Metropolitan Area, 2018

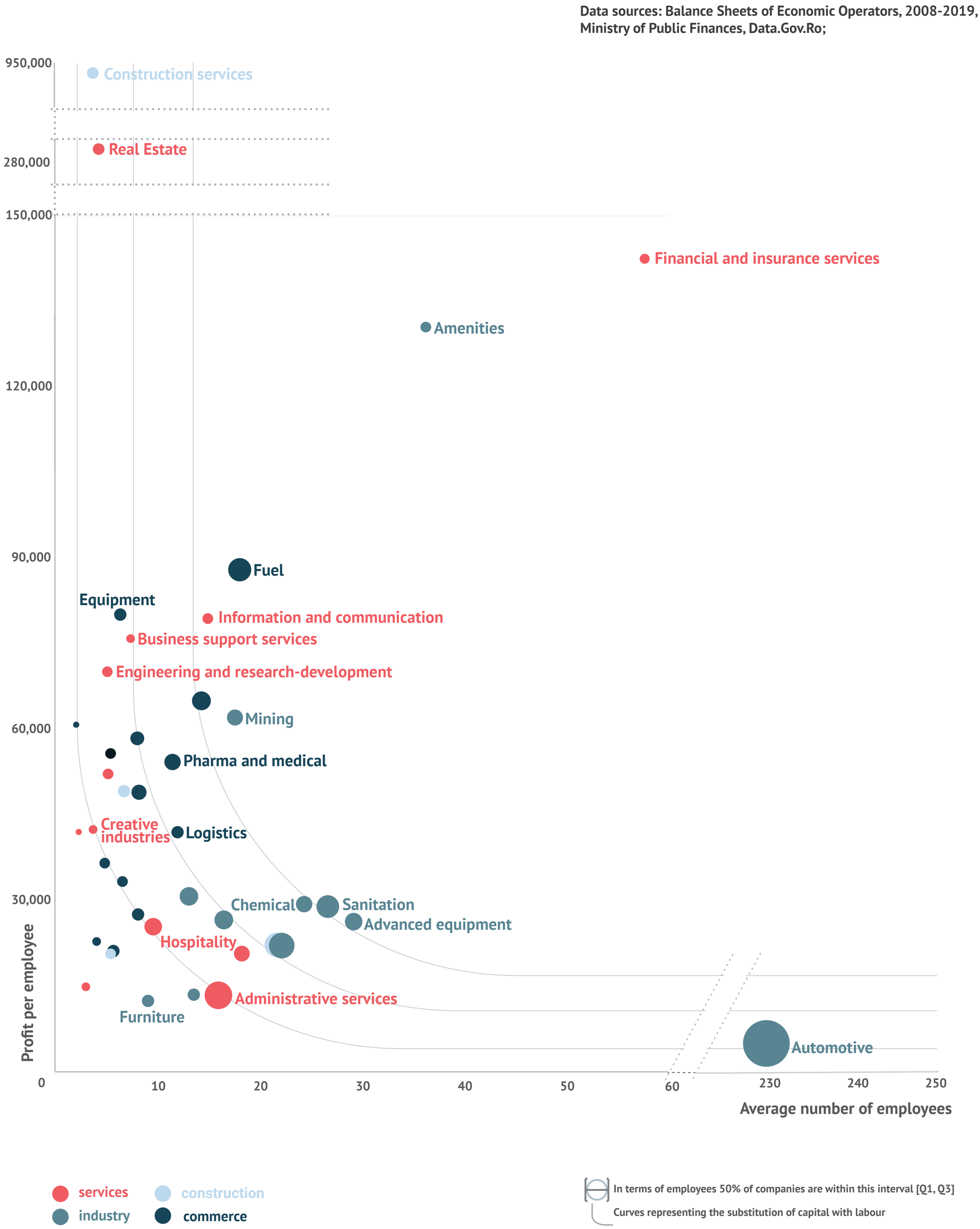


TABLE 1. Profit per employee and the average number of employees by economic subsectors in the Cluj Metropolitan Area, 2018

	Profit	Profit per employee(x)	Average no. of employees (y)
Cluj Metropolitan Area	**6,809,812,368**	**60,526**	**9**
Services	**100% (3.536.976.566)**	**73.442**	**9**
Real Estate	13%	284.523	3
Financial & insurance services	41%	142.618	53
Information & communication	16%	79.450	15
Business support services	7%	75.951	7
Engineering and research & development	6%	70.155	5
Health & social services	3%	52.221	5
Creative industries	5%	42.486	4
Education	0%	42.049	2
Hospitality	6%	25.449	10
Security & cleaning services	1%	20.723	18
Lifestyle services	1%	14.913	3
Administrative services	0%	13.432	16
Commerce	**100% (1.531.816.118)**	**35.606**	**7**
Fuels	18%	87.996	18
Equipment	11%	80.135	6
Home Appliances	2%	65.037	14
E-commerce	2%	60.850	2
Building & production materials	10%	58.451	8
Pharma & medical	6%	54.313	12
Electronics & telecom	3%	48.998	8
Logistics	3%	42.006	12
Household products	3%	36.592	5
Clothing & textiles	8%	33.353	7
Automotive aftermarket	8%	27.600	8
Lifestyle products	3%	22.856	4
Transport	13%	21.407	6
Food products	8%	21.179	6
Industry	**100% (887.214.783)**	**32.086**	**22**
Amenities	18%	130.262	31
Mining	1%	62.111	18
Metalworks	7%	30.770	13
Chemical	29%	29.392	24
Sanitation	4%	28.964	27
Building materials	2%	26.640	17
Advanced equipment	19%	26.335	29
Automotive	4%	25.118	234
Clothing & textiles	8%	22.134	22
Food industry	10%	13.538	14
Furniture	3%	12.440	9
Construction	**100% (813.978.988)**	**108.043**	**7**
Construction services	29%	944.758	1
Building construction	47%	49.195	7
Civil engineering works	5%	22.270	22
Special construction works	20%	20.690	5
Agriculture	**39.825.913**	**55.802**	**5**

FOREIGN TRADE

In the county top 100 goods exporting companies, 66 are located in the Cluj Metropolitan Area and 53 in Cluj-Napoca. Around two thirds of companies in the Metropolitan Area are industrial producers, with a total turnover of 6,258 million lei in 2018. Approximately 27% of exporters located in the Metropolitan Areas are trading companies.

These companies were on a strong upward trend in the period 2008-2018, from a total value of approximately 2,613 million lei to 9,212 million lei. The applied economic forecast model indicates that these companies might reach a turnover of almost 12,000 million lei in 2020.

The labour productivity in these companies increased significantly, the turnover in 2018 was 3.5 times higher than in 2008, while the number of employees increased 1.8 times in the same period. The labour productivity doubled in the 11 years analysed.

In terms of employability, the exporting companies in the Metropolitan Area nearly doubled the number of employees reaching nearly 19 thousand in 2018.

Only two companies in the Cluj Metropolitan Area are in the top 100 exporters nationwide, and 39 in the top 1000. This can be explained by the fact that the activities carried out by local companies in the last 20 years shifted from production of goods to services. The commercial balance of goods in the county is negative, as imports exceeded exports by 61% in 2018. Compared to the values recorded at national level, exports represent 2.6% of total exported goods, while imports represent 3.3% of total imported goods.

The most exported goods are Machinery and electrical equipment (41% of the total), followed by Metal products (9%), Plastic materials (8.5%), Furniture (7.4%), Means and transport materials (6.6%), Paper and paper products (6.2%). Imports follow a similar structure, namely Machinery and electrical equipment (25.7%), Mineral products (15%), Metal products (12%), Plastic materials (9%), Means and transport materials (8%), Paper and paper products (6%), Chemicals (5.5%).

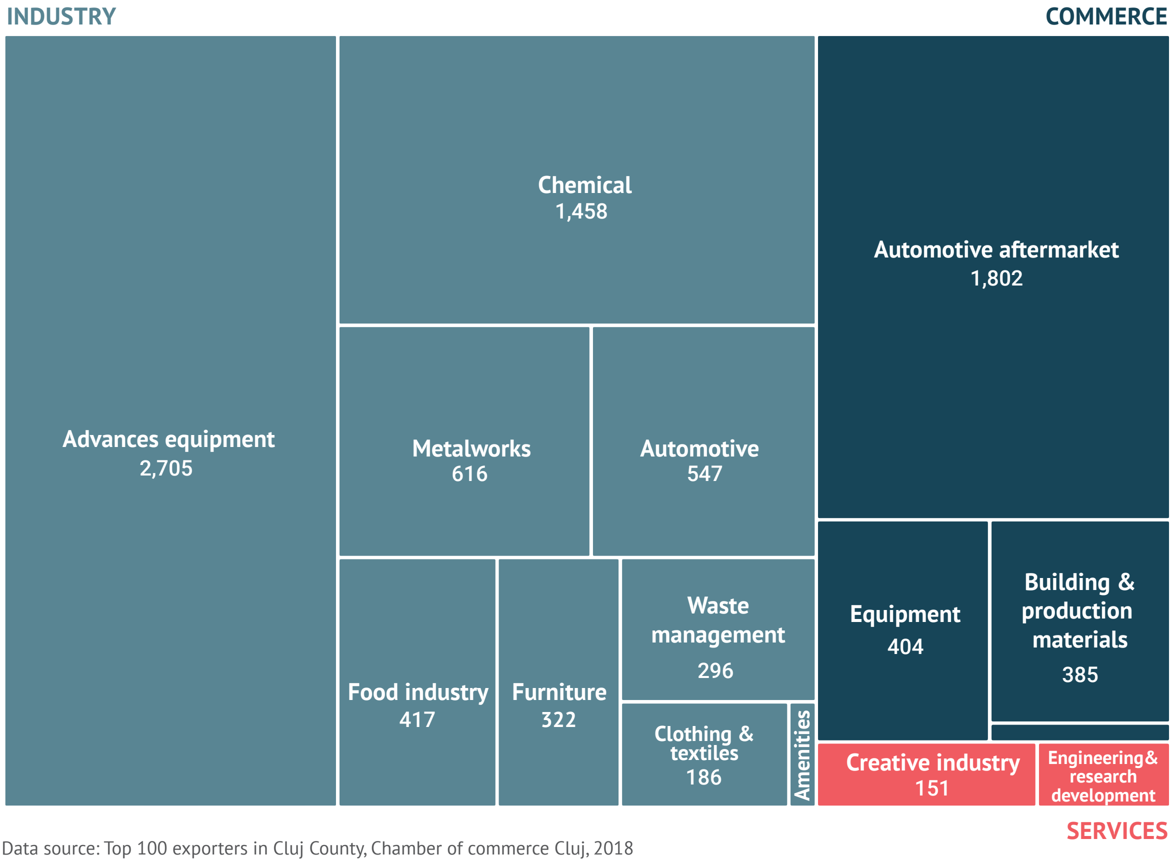
However, it should be noted that the official statistics assess foreign trade only in terms of goods, ignoring external transfers of services. This approach is disadvantageous for the Cluj Metropolitan Area whose participation in the global economy is rather related to outsourced services than to exports of goods.

Despite the fact that it only concentrates 17% of Romania’s private revenues in the information technology sector, Cluj-Napoca generates over 80% of Romania’s exports in this sector (Pierre Audoin Consultants 2019). Most exports are low value-added products, 70% of the exports from Cluj-Napoca are outsourced software components (outsourcing). Only 30% are local or complex high value-added products (ITech Transilvania Cluster 2016).

The IT sector in Cluj-Napoca is by far the most internationalized from all Romanian cities, it is part of global capital circuits and the employees in this field are highly mobile and in continuous contact with the major European and American software production centres.

FIGURE 20.

Revenue distribution top 66 exporters in the Cluj Metropolitan Area, 2018



Data source: Top 100 exporters in Cluj County, Chamber of commerce Cluj, 2018

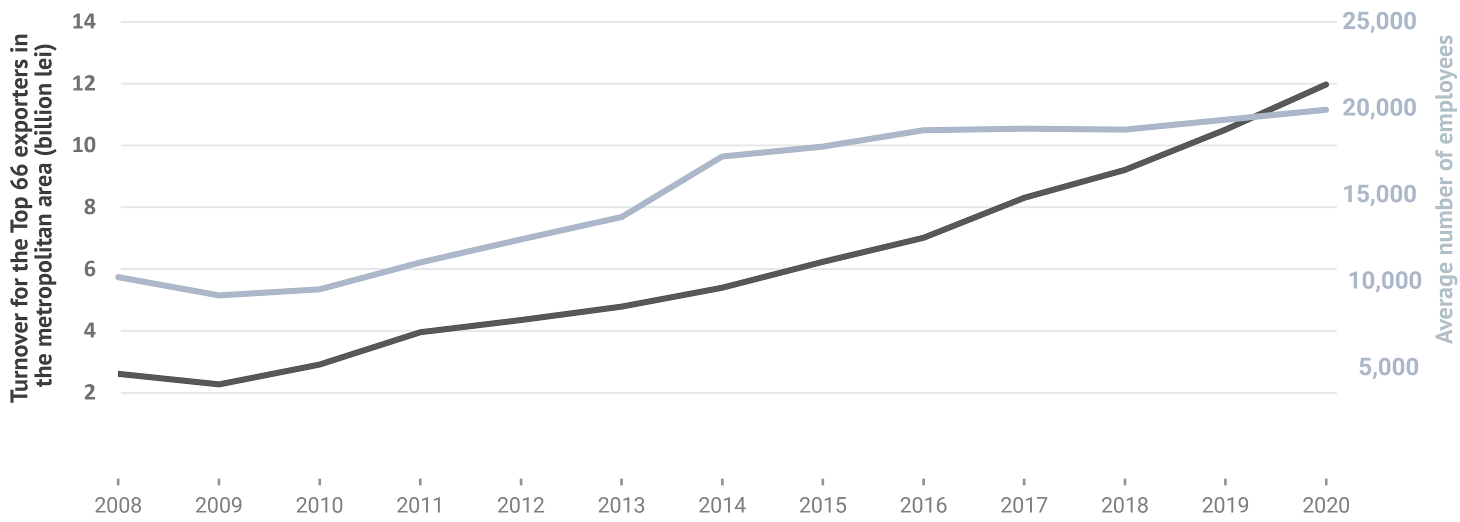


FIGURE 21.

Trade balance in Cluj County, 2018 (million Euro)

FIGURE 22.

Evolution of the turnover and number of employees for the Top 66 exporters in the Cluj Metropolitan Area and predictions for 2020



START-UP COMPANIES

A 'start-up' is a company whose annual revenue in the first three successive years since its start date is at least 20%. In the last eight years, an average of 102 'start-ups' were set up annually in Cluj-Napoca and 129 in the Metropolitan Area.

By definition, a new company is a 'start-up' only after three years of operation. Retrospectively, we can estimate for each year the percentage of newly established companies that have managed to have annual increases of at least 20% for three consecutive years. In the last eight years, on average, 3% of the newly established companies have managed to become 'start-ups', both in Cluj-Napoca and in the Metropolitan Area.

There is an upward trend; from the cohort of companies established in 2008, 2% could be labelled as start-ups in 2011. In 2018, the percentage increased to 4% and in the last decade the number of companies in the Cluj Metropolitan Area doubled.

On average, 80% of 'start-ups' are based in Cluj-Napoca. However, there is a tendency for 'start-ups' to relocate to metropolitan localities. If, in 2011, only 8% of new 'start-ups' were located in metropolitan localities, in 2018 the percentage increased to 23%. Most of these are located in Florești.
In the last decade there were 1031 'start-ups' in the Metropolitan Area. They operate in all areas of the economy, but in different proportions.

Half of the 'start-up' companies operate in services and most of them have operated in areas such as information technology, business support services, creative industries and hospitality – in total, 66% of 'start-ups' are operating in services. One in ten companies had been active in information technology. This is a favourable economic activity for launching a 'start up' in the Cluj Metropolitan Area.

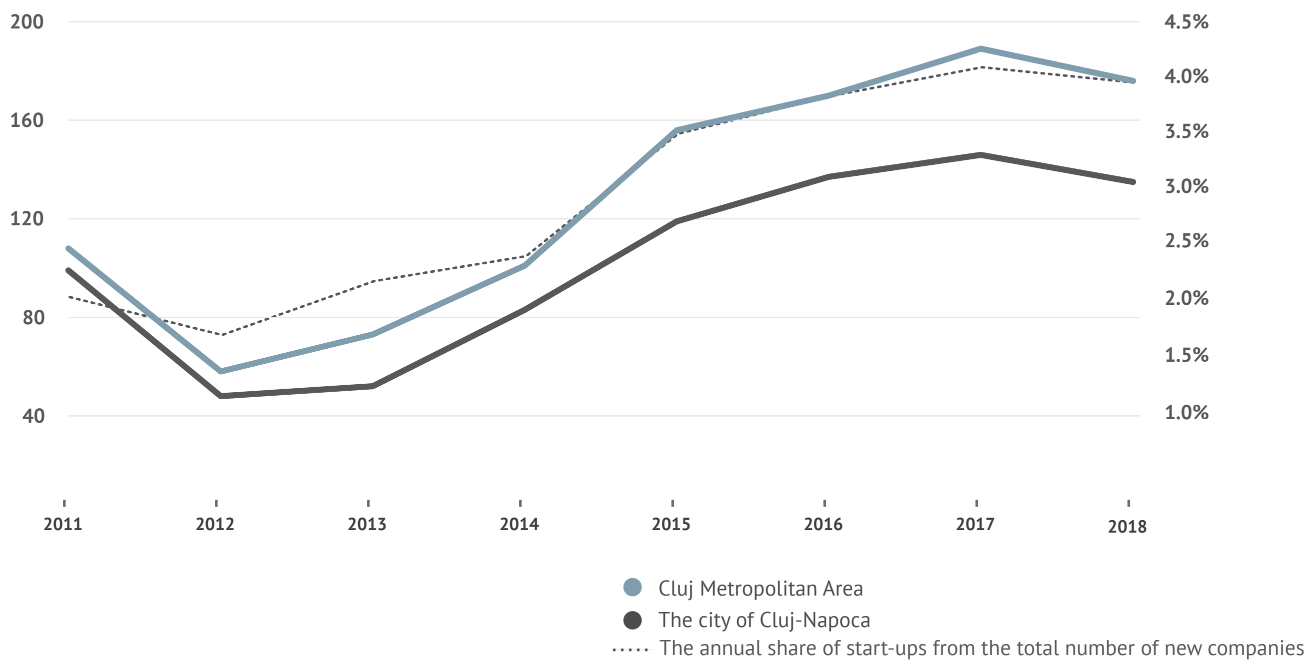
The second sector with most 'start-ups' is trade and transport: out of the total number of 'start-up' companies in this sector, 72% operate in transport and marketing and food products, in productive equipment, cars & auto parts and lifestyle products.

The 'start-ups' that operate in the food sector, either in marketing or production, are worth mentioning; due to the large number of employees in high value-added sectors, there is a significant domestic market in Cluj-Napoca for premium foodstuffs. These industries are complementary to hospitality as they serve the same clients.

From the total number of companies active in the Metropolitan Area in 2018, 4.3% namely 901 were 'start-ups'. After having operated for a minimum of three years, 12% of 'start-ups' ceased their activity. Proportionately, trade is the sector with most 'start-ups' closing down, with a maximum of 26 companies closed in 2013. However, at the subsector level, one in ten 'start-ups' closed down in the last eight years was operating in IT. The dynamic is not surprising, considering that this is also the sector in which most such companies are launched. In fact, information and communications technology is the most active entrepreneurial field in the city of Cluj-Napoca.

FIGURE 23.

The volume of start-ups in the Cluj Metropolitan Area and Cluj-Napoca

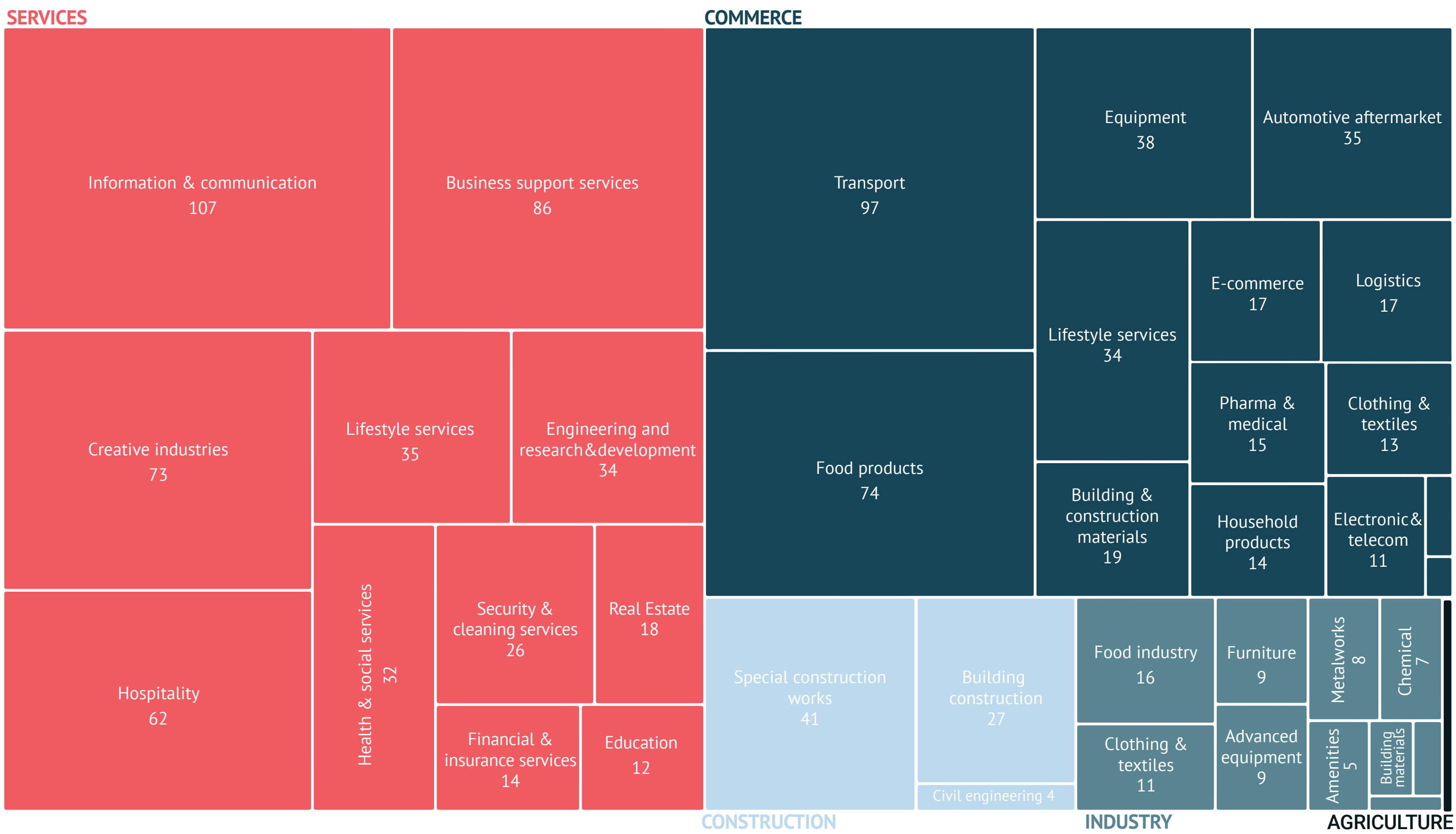


Data sources: Companies registered with the Trade Register up to 2018 and Companies cancelled from the Trade Register up to 2017, National Trade Register Office, Data.Gov.Ro; Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro;

Technical data: Company whose annual revenue in the first three successive years since its operation is at least 20%.

FIGURE 24.

The distribution of start-ups by economic sectors in the Cluj Metropolitan Area



BUSINESS INFRASTRUCTURE

The three major groups that make up the local business infrastructure are: office spaces, industrial parks and co-working spaces.

Office spaces in Cluj-Napoca:

- At the end of 2018 there were 28 class A office spaces with over 270 thousand m2.

- Seven more such spaces were completed in 2019, the total area reaching almost 314 thousand m2.
- Seven other major class A office spaces are to be completed within 2020-2021, with an estimated area of 56.1 thousand m2.

- In addition, there are several class B offices with an area of about 50 thousand m2.

- In the period analysed, the class A offices opened for business increased almost 5 times.

- The largest annual increases were registered in 2015 and 2017 (66% respectively 31%), when the biggest areas were opened for business: 76.6 thousand m2 in 2015 and 60.4 thousand m2 in 2017.

- In 2018, the average rental price for these spaces was 11 euro/ m2.

Industrial parks in the Cluj Metropolitan Area:

- Four of the ten Cluj County industrial parks are located in the Metropolitan Area, as follows: TETAROM I, II, III and Cluj Innovation Park (with the two centres: CREIC – Regional Centre of Excellence for Creative Industries and TEAM – Technology Evolution Entrepreneurship and Microenterprises)

- Tetarom III is located in Jucu and accommodates clients such as Cosmetic Plant, Robert Bosh and De'Longhi Romania.

- In terms of area, Tetarom I has 320.000 m2; Tetarom II – 120.000 m2; Tetarom III – 1.545.600 m2; CREIC – 2.300 m2; TEAM – 1.515 m2;

- Two other Tetarom projects are under development, with a total area of 2.000.000 de m2.

The co-work spaces appeared as a response to the intense development of 'start-ups' in the city;

- There are over 15 such working spaces in Cluj-Napoca.

- Rental prices vary between 50 euro/month to 250 euro/month depending on the complexity of the services used.

FIGURE 25.

Area of industrial platform, class A offices and co-working spaces in Cluj-Napoca, 2019

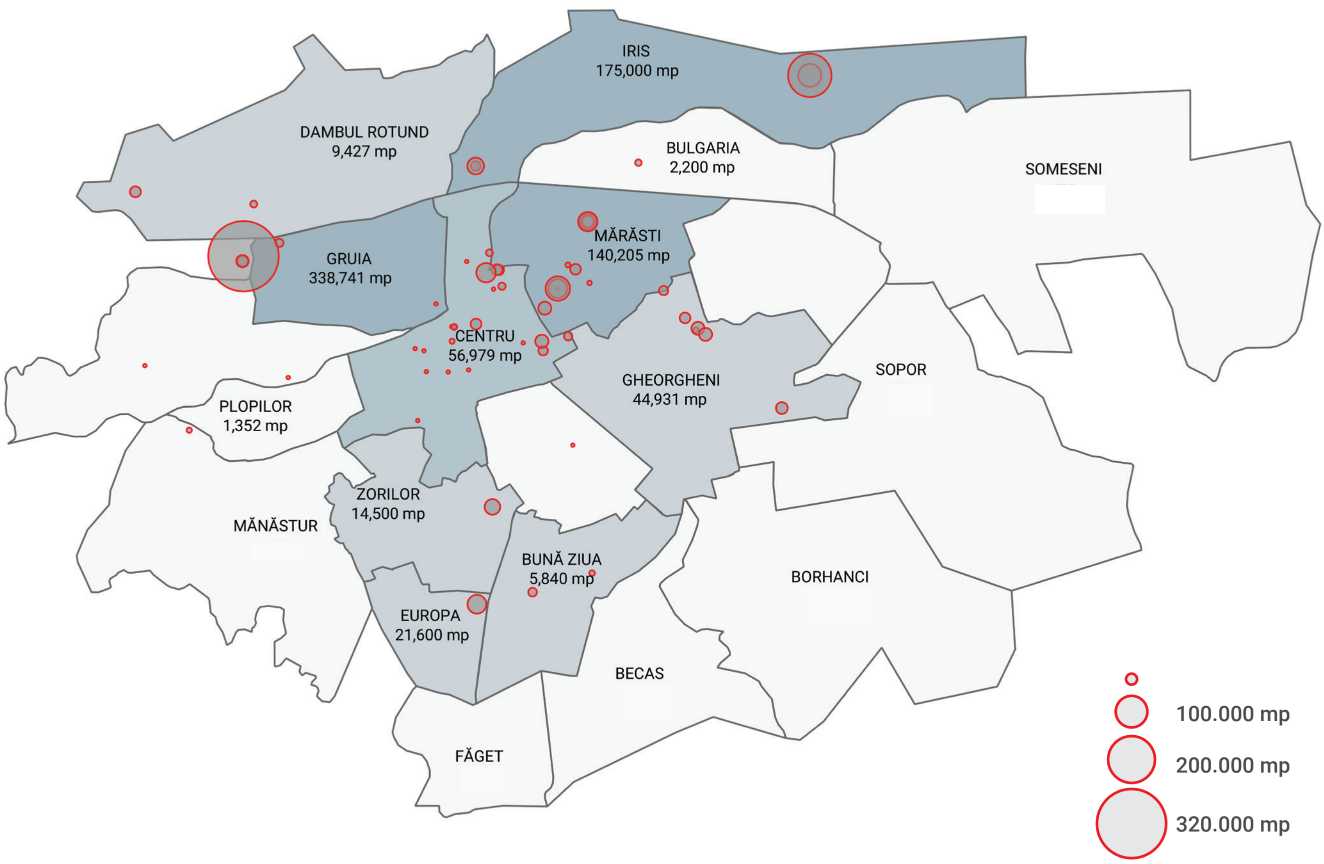
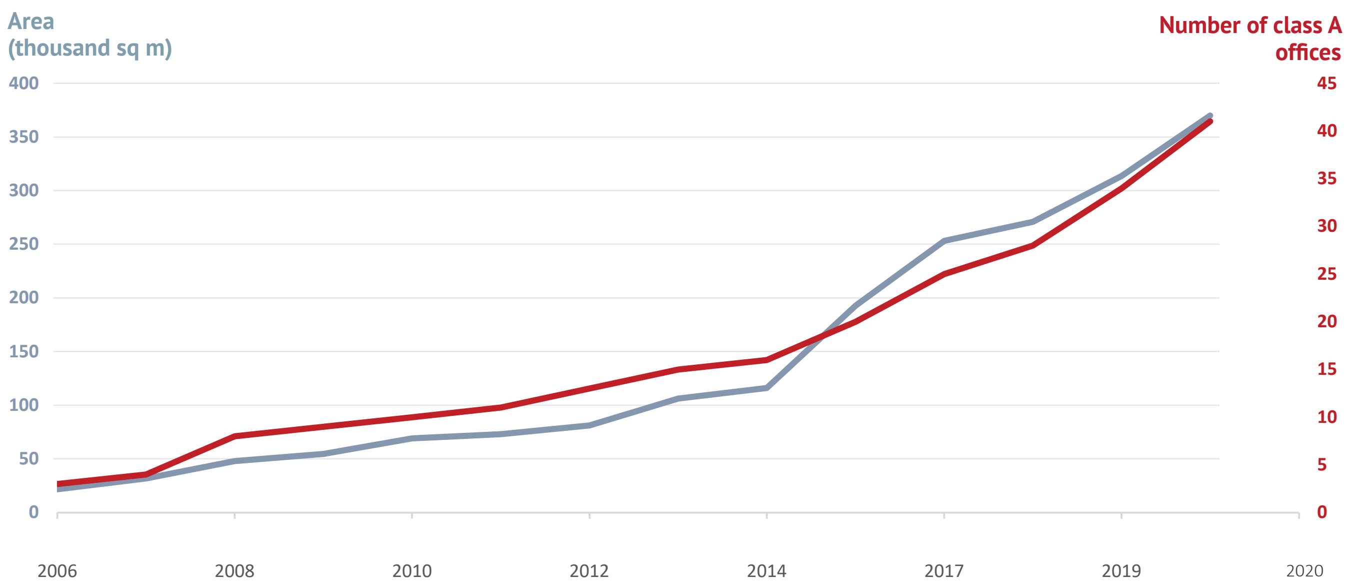


FIGURE 26.

Annual cumulative dynamic of the area (in thousand square meters) and the number of class A offices in Cluj-Napoca, 2006-2019, 2020 predictions



The Labour Market

LABOUR MARKET STRUCTURE

The Cluj Metropolitan Area has become an outsourcing destination. The composition of the workforce changed dramatically after the 2008 recession, and Cluj became one of the Central and Eastern European hubs that benefited from the new forms of globalization through outsourcing. In terms of employment, the composition of the workforce changed dramatically.

The urbanization of global services: 53.7% of the 203.9 thousand employees in Cluj-Napoca work in services. The dominant sub-sectors in the private sector are those connected to global outsourcing flows: Information & Communications Technology, Business Support Services (Business Process Outsourcing, Shared Service Centres, and Call Centres) and Engineering, Research & Development. In just a decade, the number of employees in these sectors has quadrupled and Information Technology registered the most significant increase with 22.6 thousand employees in 2018.

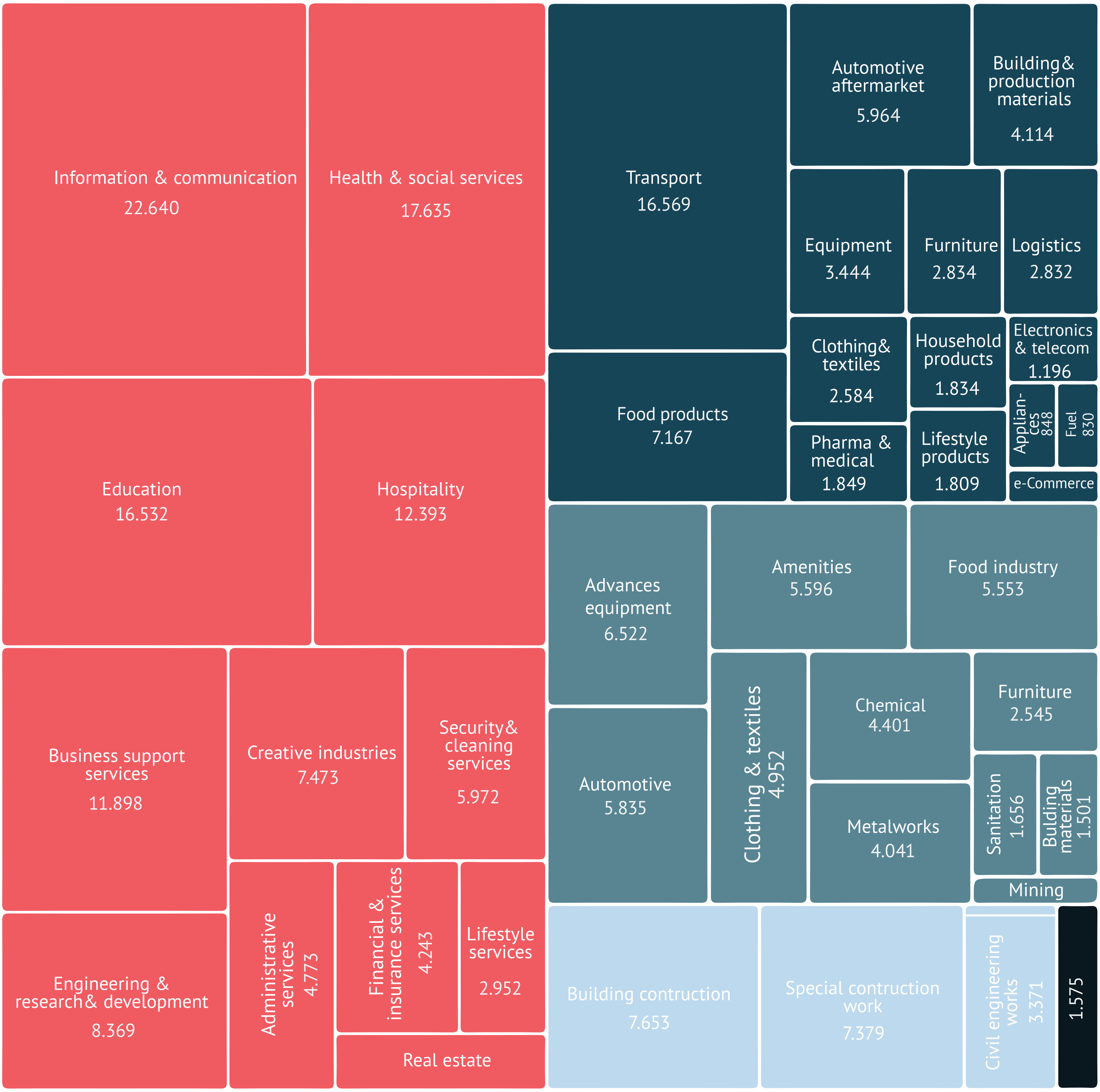
The urbanization of related private services: There are subsectors of services in Cluj-Napoca that serve those employed in globalized sectors (hospitality, lifestyle, real estate) as well as global capital (security, cleaning, creative industries). The hospitality sector has probably experienced one of the strongest growths, as the number of restaurants, cafes and bars has tripled. Compared to 2008, Cluj-Napoca is the Romanian city with the highest growth of this subsector; therefore, it became the city with the highest density of cafes, restaurants and bars (1.32 per 1.000 people, compared to the 0.45‰ national average).

Public support sectors: Education and health are structuring subsectors for the labour market in Cluj-Napoca. In total they have 32.4 thousand employees, 84% of which are employed in public organizations. In the last decade the number of employees in the private health sector tripled, with 3.6 thousand employees – which represent a fifth of the total number of employees in this sector.

The suburbanization of employees in the service sector: The city’s immediate suburbs concentrate a population with tertiary education that commutes daily to Cluj-Napoca, especially in the city centre, Mărăști and Gheorgheni. 39% of the working age population in Florești has university education, while in Cluj-Napoca the percentage is 38%.

The suburbanization of the production: In the last decade, the transport and logistics industrial work has been relocated in the Metropolitan Area (especially in Apahida, Jucu, Bonțida), and in smaller cities in the county. Out of the 31 thousand employees in metropolitan localities, 34.9% work in the industrial sector. The suburban industrial sector is also strongly dominated by transnational capital, either through ownership structures or supply chains, where domestic companies play the role of captive producer by supplying transnational companies. The industrial sector is dominated by Automotive (8,138 employees), which plays an important role in the vertical integration of financial leasing services, industrial software production and motor vehicle trade.

FIGURE27.
Structure of the workforce by activity categories in the local economy, 2018



services/ industry/ commerce/ construction/ agriculture/

State 47.137

Private 187.956

Data sources: List of employers in Cluj County with active employees, 2008, Cluj County Statistics Directorate.

Technical data: The subsectors were grouped so as to highlight the manner in which managers in key sectors understand the economic activities in the local economy. The categories were refined based on the individual and group interviews conducted in 2019. The interviews were conducted by the Interdisciplinary Centre for Data Science. The categories were coded based on the company NACE code.

TABLE 2. Distribution of employees in Cluj-Napoca and the in the Cluj Metropolitan Area, 2018

Employed persons	Cluj-Napoca		Cluj Metropolitan Area	
	203.996	100%	235.093	100%
Services	**109.625**	**54%**	**117.232**	**50%**
Information & communication	22,102	20%	22,640	19%
Health & social services	16,969	15%	17,635	15%
Education	15,485	14%	16,532	14%
Hospitality	11,085	10%	12,393	11%
Business support services	11,177	10%	11,898	10%
Engineering & research-development	7,970	7%	8,369	7%
Creative industries	6,684	6%	7,473	6%
Securitaty & cleaning services	5,273	5%	5,972	5%
Administrative services	4,137	4%	4,773	4%
Financial & insurance services	4,052	4%	4,243	4%
Lifestyle services	2,564	2%	2,952	3%
Real Estate	2,127	2%	2,352	2%
Commerce	**45.686**	**22%**	**54.376**	**23%**
Transport	14,413	32%	16,569	30%
Food products	5,885	13%	7,167	13%
Automotive aftermarket	4,681	10%	5,964	11%
Building & production materials	3,585	8%	4,114	8%
Equipment	2,685	6%	3,444	6%
Furniture	2,436	5%	2,833	5%
Logistics	2,436	5%	2,833	5%
Clothing & textiles	1,819	4%	2,584	5%
Pharma & medical	1,620	4%	1,849	3%
Household products	1,614	4%	1,834	3%
Lifestyle products	1,510	3%	1,809	3%
Electronics & telecom	1,118	2%	1,196	2%
Home appliances	790	2%	848	2%
Fuels	623	1%	730	1%
E-commerce	471	1%	602	1%
Industry	**32.389**	**16%**	**43.675**	**18%**
Advanced equipment	3,460	11%	6,522	15%
Automotive	5,751	18%	5,835	13%
Amenities	4,550	14%	5,596	13%
Food industry	3,038	9%	5,553	13%
Clothing & textiles	4,515	14%	4,952	11%
Chemical	3,253	10%	4,401	10%
Metalworks	3,115	10%	4,041	9%
Furniture	1,368	4%	2,545	6%
Sanitation	1,511	5%	1,656	4%
Building materials	1,231	4%	1,501	3%
Mining	597	2%	649	2%
Construction	**15.319**	**8%**	**18.659**	**8%**
Construction services	6,074	40%	7,653	41%
Special construction services	6,101	40%	7,379	40%
Civil engineering works	2,948	19%	3,371	18%
Construction services	196	1%	256	1%
Agriculture	**977**	**0.5%**	**1.575**	**0.7%**

THE SPECIFICS OF THE CLUJ-NAPOCA ECONOMY

The level of similarity between the local and national economy can be assessed by the Hachman Index, based on the structure of employees by specific activities. The index has different values at city, county and metropolitan level.

Cluj County has a similar economic structure to the national one. However, the level of similarity decreased over time (0.96 in 2008 and 0.82 in 2018).

At the level of the Cluj Metropolitan Area, the level of similarity is low to average, with relatively constant values between 0.3 (in 2009) and 0.35 (in 2016). The Metropolitan Area specializes in industry and agriculture; therefore, it is more similar to the national economy. However, compared to the county value, the level is very low, mainly due to the activities being carried out in Cluj-Napoca, which has a high degree of dissimilarity to the national economic structure.

Cluj-Napoca registered the highest values of the similarity index in 2008, respectively 0.31, but towards the end of the period it decreased to 0.29. The continuous decrease of the economic similarity is due to an extremely different economic structure.
We can evaluate the source of the economic dissimilarity of the Cluj Metropolitan Area in relation to the rest of the national economy by breaking down the index. We can detect the sectors that registered an increase in the local economy and see their behavior in the national economy.

In the last decade the subsectors that increased significantly the number of employees in Cluj-Napoca are Health & Social Services and Education. These are mostly public sectors; however, there is also a significant private health sector. At national level the number of employees in the Health sector increased, especially in the private sector, however the Education sector experienced a contraction due to the demographic decline.

The following subsectors also increased the number of employees in Cluj-Napoca: Information & Communications Technology, Business Support, Hospitality, Creative Industries and Financial Services & Insurance. The IT and Business Support sectors grew at national level, especially in a few major urban poles: Timișoara, Iași and especially Bucharest. The Hospitality sector remained constant, relying largely on a higher domestic demand in areas specializing in mountain or summer tourism. However, in Cluj-Napoca there are some differences, as here, the hospitality sector relies on a local population (employees in globalized sectors) and tourists attracted by the agenda of urban events. The Creative Industries and Financial Services& Insurance sectors decreased at national level, but not in Cluj-Napoca, the only city apart from Bucharest that has a local bank (Banca Transilvania).

The Transport subsector registered an impressive expansion in Cluj-Napoca, while it remained constant at country level. There is a significant domestic demand for transport (taxi, public transport, railway), however the city is home to several very large freight companies with national and international service that are located in metropolitan localities.

FIGURE 28.

Economic sectors with the most important dynamic of the number of employees in the metropolitan area, compared with the national level, between 2008 and 2018.



The size of the circles represents the number of employees in 2018

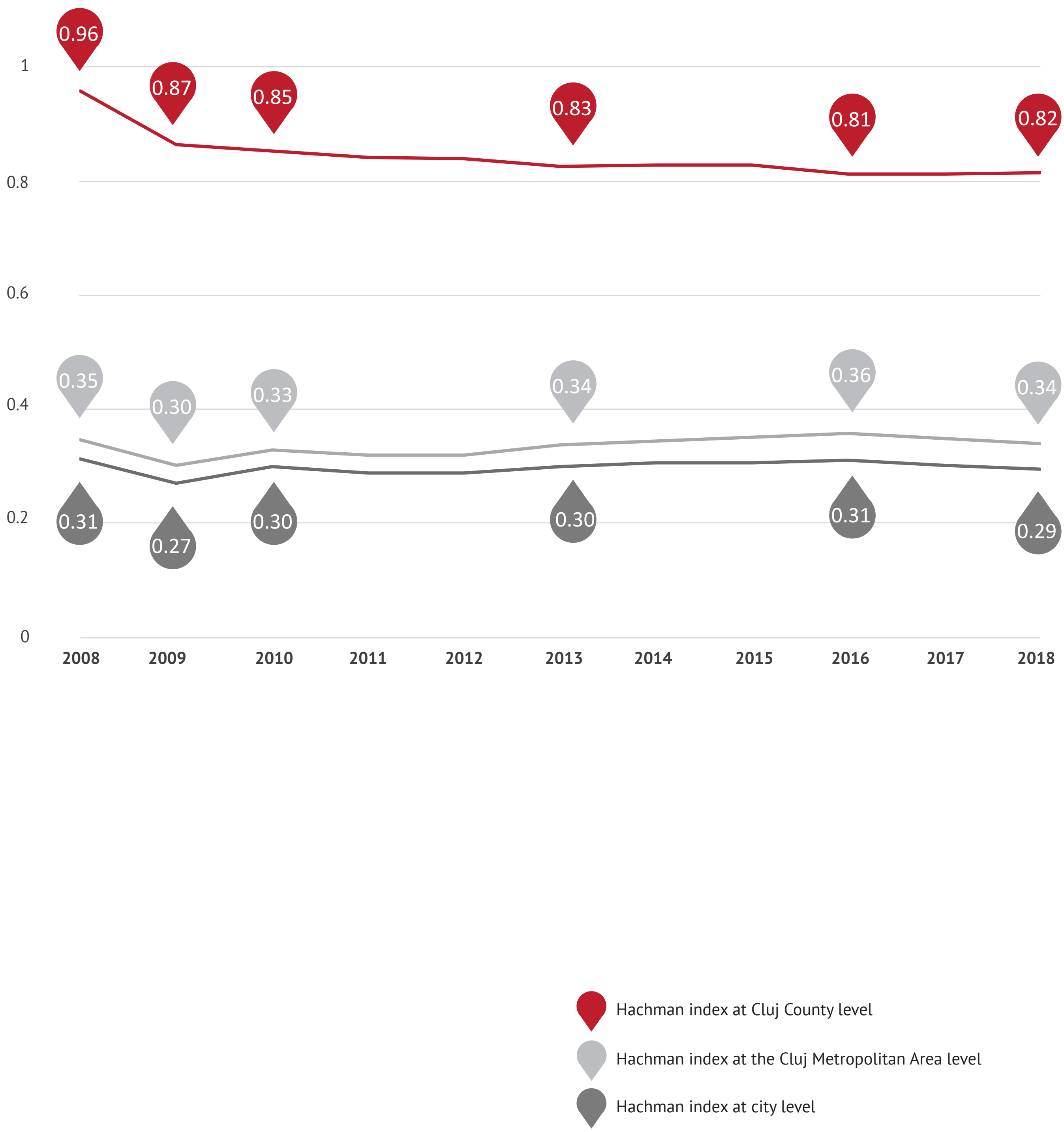
The horizontal axis represents the regional competeiveness

The vertical axis represents the industrial mix

Data sources: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro; National Institute of Statistics, TEMPO, Table SAN104B, SCL104D, CDP103E, ART121A, ART122A, ART123A; List of employers in Cluj County with active employees, 2008, Cluj County Statistics Directorate.

FIGURE 29.

Dynamic of the Hachman index in Cluj County, the Cluj Metropolitan Area, Cluj-Napoca



Data sources:

Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro;
National Institute of Statistics, TEMPO, Table FOM104F.

Technical data:

The shift-share analysis highlights the extent to which the growth of a regional economy is due to local specificities and to a national economic trend. The final goal is to capture the activity sectors in which the regional economy is either in a competitive advantage or disadvantage. The most widely used calculation method is the number of employees. Thus, a comparison is made between the share of employees in the local and national economy. The methodology divides the effective growth rate into 3 components (sources of growth):

1. The effect of national growth = $A_i^{t0} * RO^{t1}/RO^{t0}$
2. The Industrial mix = $A_i^{t0} * RO_i^{t1}/RO_i^{t0}$ - CN
3. The regional competitive effect = $A_i^{t0} * (A_i^{t1}/A_i^{t0} - RO_i^{t1}/RO_i^{t0})$,

Where:

A_i^{t0} — the number of employees in the *i* sector of the local economy, in the base year,

A^{t1} — the number of employees in the *i* sector of the local economy, in the final year, at the end of the period analysed,

RO^{t0} — the total number of employees in the national economy in the base year,

RO^{t1} — the total number of employees in the national economy in the final year,

RO_i^{t0} - the number of employees in the *i* sector of the national economy, in the base year,

RO_i^{t1} - the number of employees in the *i* sector of the national economy, in the final year.

The higher the regional growth in a given sector, the higher its competitive advantage over the national economy.

The Hachman index assesses the degree of similarity between the economic structure of a local entity and the national structure by looking at the number of employees. It takes values between 0 and 1, where 0 is perfect dissimilarity and 1 perfect similarity. The share of each economic activity in the local or national economy is calculated and the local share is reported to the nation correspondent. The Hachman index formula:

$$IH \quad \frac{1}{\sigma_i \frac{P_{local}}{Sa'_i} \times P_{local}}$$

P_{local} is the share of employees in the sector *i* in the local economy, respectively P_{nati} is the share of employees in the sector or group *i* in the national economy $\frac{P_{local}}{Sa'_i}$ also called *Location Quotient – LQ*.

OCUPATIONAL CATEGORIES

The Cluj Metropolitan Area concentrates the largest share of specialists and managers in Romania, namely 30% of the employed population.

In 2011, one in three employees in Cluj-Napoca had been working as a specialist (33%). Considering the distribution of employees in 2018 per economic sectors and using the distribution of occupations by activities in 2011 we can estimate the number of specialists in the city. Thus, in 2018 there were 65.9 thousand specialists in Cluj-Napoca.

The proportion is similar in Florești, where one in three employees is a specialist. We cannot make similar estimations for this locality, as a large part of employees actually work in Cluj-Napoca. That is why the occupational composition in Florești is not sensitive to changes in the economic activity of the locality. However, there were 3.8 thousand specialists in the census. If we keep the share of employees and given the size of the locality and the working age population, it is very likely that the current number is around 11.8 thousand specialists.

In Baciu and Ciurila one in five employees works as a specialist. This concentration is directly related to the share of people with tertiary education working in the city and living in first ring localities due to cheaper real estate and accessibility.

If we exclude Florești from the metropolitan localities, the share of specialists drops to 11.6%. For the rest of the metropolitan localities, workers account for 39.4% of the total number of employees and those working in the service sector represent 18.9%. The latter work mainly in logistics and transport, and some of the workers employed in the trade sector commute to Cluj-Napoca.

The distribution of specialists and managers in Cluj-Napoca of the total number of employees overlaps inversely with the distribution of workers (skilled, semi-skilled and unskilled) and service workers. The last two categories account for 43% of the total number of employees, i.e. 87.7 thousand employees in 2018. In the last decade there was a decrease of 10 thousand employees in the industrial sectors in Cluj-Napoca and an increase of 10 thousand in the Metropolitan area. Workers in Cluj-Napoca started working in services (10 thousand employees) and the workforce needed for industry is covered by commuting.

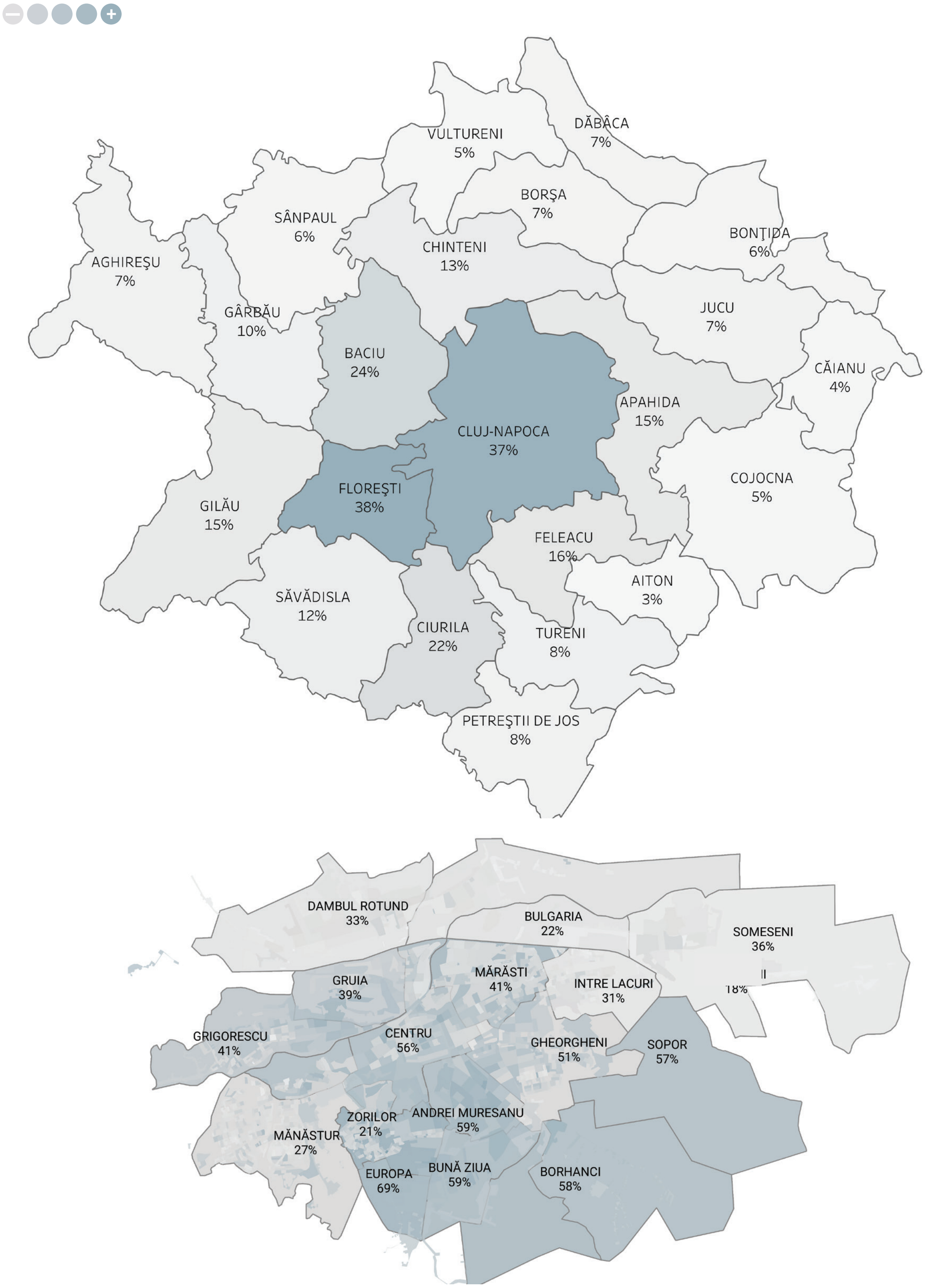
The Southern area (Bună Ziua, Europa, Făget, Zorilor) and the city centre are populated by many families with small children (pre-schoolers) whose parents have privileged positions on the work market. These neighbourhoods also have a lower population density.

In the North there is a higher concentration of employees working mostly in industry and services, on less specialized positions. The large working-class neighbourhoods in the Western and Eastern part of the city, Mănăștur and Mărăști still have the largest share of employees and the lowest number of specialists compared to the city average.

FIGURE 30.

Distribution of managers and specialists by residence, share of the total number of employed persons, 2011

Data source: Data aggregated at folder level, Population and Housing Census, 2011.



LABOUR PRODUCTIVITY

As in the case of revenues, the greatest dynamic is in metropolitan localities.

— Here the labour productivity increased by 72% in the period analysed.

— During the same period the labour productivity growth rate in Cluj-Napoca was 62%.

— However, in absolute terms the city remained more productive due to its economic structure, the types of activities carried out there, which was more intensive in knowledge and capital and less in labour.

— Due to a more accelerated development in metropolitan areas, the ratio to the city decreased; at the beginning of the period analysed, the labour productivity was almost 28% higher in Cluj-Napoca, while in 2018 the difference was reduced to about 20%.

The annual developments were also different.

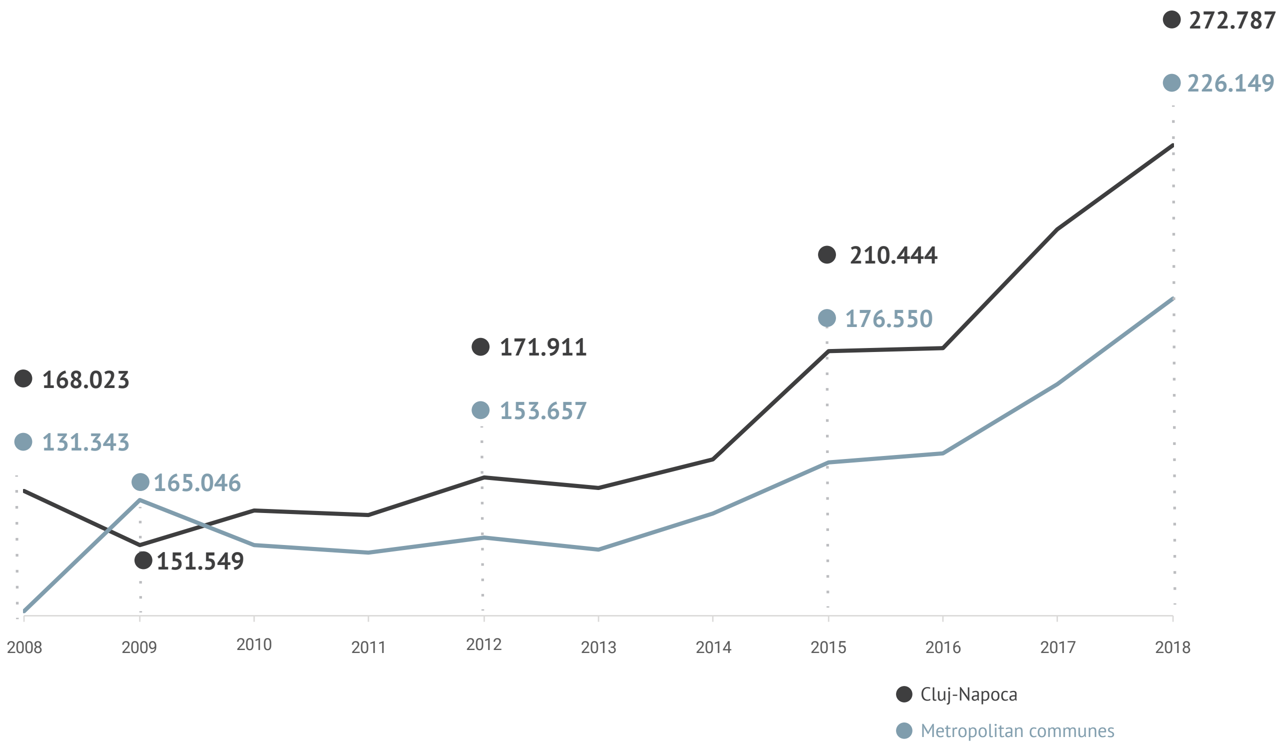
— For example, in 2009, the labour productivity in the city was already affected by the international financial crisis, so it registered a 10% drop compared to 2008, while the metropolitan localities registered a 26% increase.

— In 2010, metropolitan localities also registered an 8% decrease, however less than Cluj-Napoca.

— The highest rates of labour productivity growth in Cluj-Napoca were registered in 2015 and 2018 (18% respectively 17%).

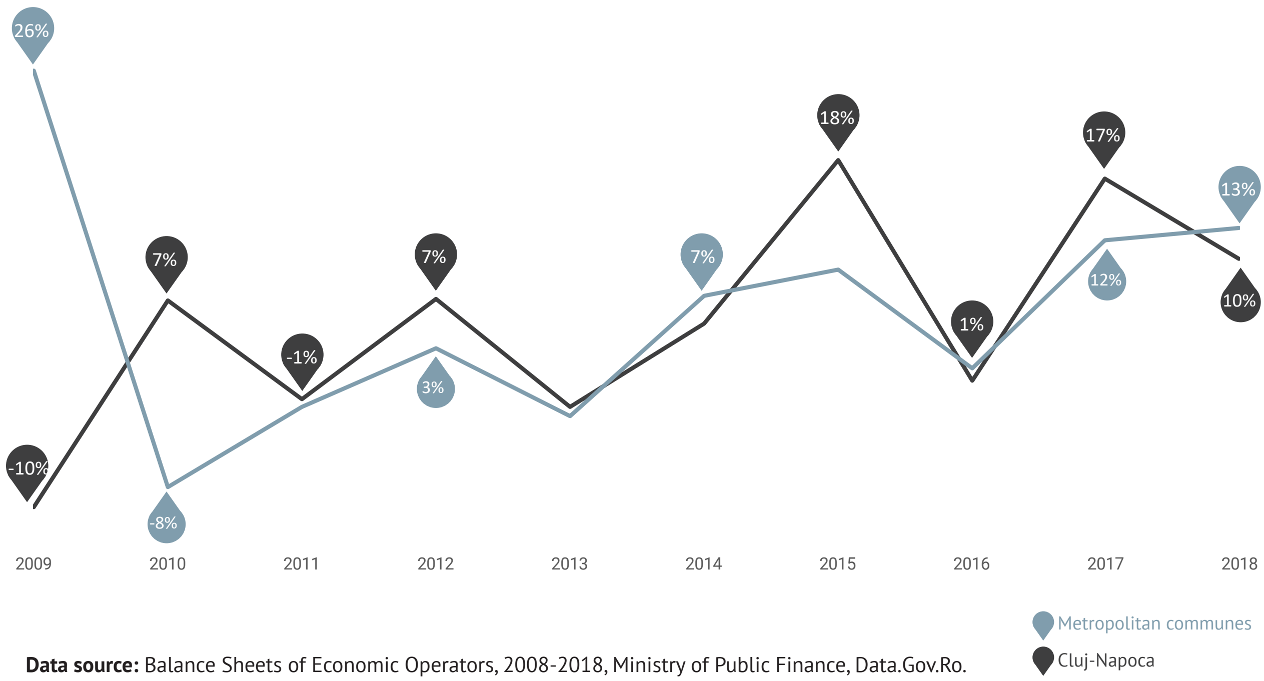
— However, the increase in labour productivity was not constant, in both the city and the metropolitan localities, and there were considerable variations each year.

FIGURE 31.
Work productivity evolution 2008-2018 in Cluj-Napoca and metropolitan communes (lei)



Data sources: authors' estimations based on the Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro.
Technical data: The work productivity was calculated as a ratio between the turnover of companies located in the Metropolitan Area and the number of employees

FIGURE 32.
Annual dynamic of the work productivity 2008-2018, Cluj-Napoca and metropolitan communes



Data source: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro.

UNEMPLOYMENT

The unemployment rate at locality level decreased over the period analysed. In 2010 the national unemployment rate was 4.3%.

Due to the international financial crisis, the unemployment rate in the city and the Metropolitan Area was 1.96% respectively 2.33% in 2010, approximately half of the national estimated value. At city level the share was less than 1% (0.85%) in 2014, and at the level of the Metropolitan Areas it was 0.94% in 2015.

The level of the unemployment rate dropped significantly thanks to the positive economic evolution; therefore, in 2018 it was 0.31% in Cluj-Napoca and 0.43% in the Metropolitan Area.

Therefore, the minimum level was reached in 2018, when the unemployment rate in Cluj-Napoca was almost 7 (6.7) times lower than the national rate, and in the Metropolitan Area it was almost 5 (4.84) times lower. These developments were due to the increase in the number of inhabitants but mostly to a real decrease in the unemployment rate.

In 2010 there were almost 4.4 thousand unemployed people in Cluj-Napoca, and in 2018 the number was almost 7 times lower, with 655 people officially unemployed.

The Metropolitan Area had an almost identical evolution: in 2010 there were 6,340 unemployed and 1,213 in 2018. The rate of decrease was about 80% lower than in the city due to problems in some of the localities during the period analysed.

Ciurila had the highest unemployment rate during this period (over 10% annually), with a 19.8% peak in 2012. Vultureni also had a high unemployment rate of 14.5% in 2016 and 14.3% in 2017, with a sudden decrease in 2018 when it dropped to 4.3%.

Regardless of the individual model of economic development, all the growth poles registered upward evolutionary trends in the period analysed. Thus, on the one hand, these economies started to incorporate available local labour force. This helped decrease significantly the unemployment rate. On the other hand, the growth poles started to attract various categories of new labour force from other localities. Thus, through various transmission channels, a new process of spatial diffusion emerged in terms of unemployment evolution, with a decreased tendency rate also in the source localities.

Bucharest had the lowest unemployment rate (1.7%), followed by Iași (1.8%). The highest values were registered in Brașov (2.5%). During the last 9 years, the capital had a slow decreasing tendency, with the unemployment rate dropping from 1.7% in 2010 to 1.2% in 2018.

All the other growth poles had more pronounced downward trends, with the major cities (Cluj-Napoca, Iași, Timișoara and Brașov) registering decreases of 5-6 times of the unemployment rate due to the intense economic development.

In 2018 Cluj-Napoca, Iași and Brașov had unemployment rates of only 0.3%. Timișoara had an unemployment rate of 0.4%, identical with the metropolitan rate.

FIGURE 33.

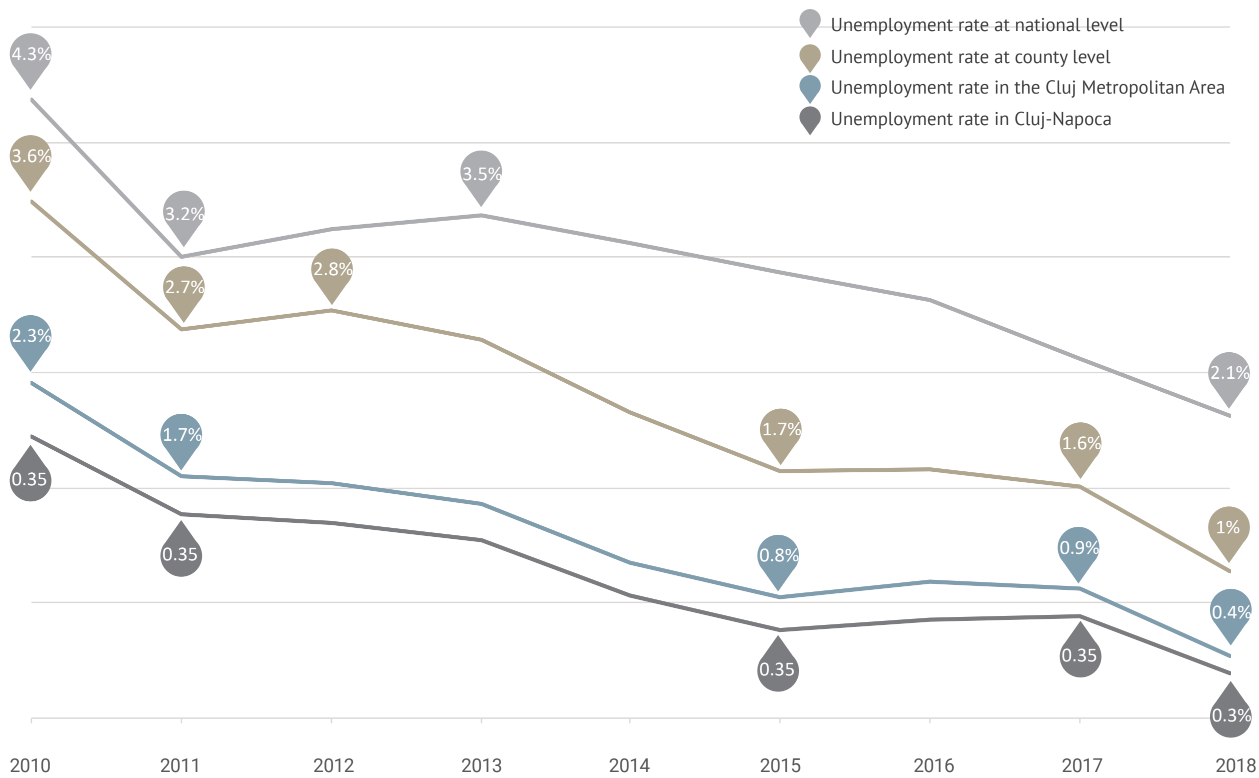
Spatial distribution of the unemployment rate in Cluj-Napoca and the Cluj Metropolitan Area, 2018 and the unemployed rate in Cluj-Napoca, the Cluj Metropolitan Area and at national level

Data sources: National Institute of Statistics, TEMPO, Table SOM101E, SOM101F, POP108D.

Technical data: In accordance with GEO no. 75/2000 (on the disadvantaged areas regime) the unemployment rate at locality level is ratio between the number of unemployed persons and the active population aged between 18 and 62.

Officially, the population aged between 18 and 62 is considered work resource. In order to estimate the unemployment rate at metropolitan level we aggregated the number of unemployed persons at locality level and the total number was reported to the work resources (the total population aged between 18 and 62 in the Metropolitan Area).





LOCAL HUMAN DEVELOPMENT

As a counterbalance to index families based on Gross Domestic Product, the concept of human development is an economic approximation of the quality of life generated by economic development.

In 1990 this concept was given a statistical form and economists Amartya Sen (2001), Gustav Ranis and Meghnad Desai adapted it for the United Nations Development Program.

The Local Human Development Index (LHDI) is a statistical interpretation adapted to the national context for the World Bank technical reports by Dumitru Sandu (2013).

The classification suggested is a continuous measure between 0 (very low development) and 100 (comprehensive development), subsequently divided into several categories. In the first calculations made in 2008 and 2011 the index had six development categories and subsequently, the method was refined and in 2014 it had seven categories.

Dumitru Sandu (2011) makes these types of classifications starting from four forms of community capital: human (the average level of education), vital (the average age of the population over 14 years and life expectancy), material (private: the number of cars per 1000 people and the average usable area of a dwelling; public: gas consumption per capita) and locality size.

The index is estimated at village level and it has a separate version for the urban level. The index can also be calculated at locality level by weighting the average with the locality size.

The local human development index allows a mapping of metropolitan localities and a ranking of the area in relation to the national level.

Cluj-Napoca ranks first in terms of development potential and quality of life in Romania based on LHDI.

In 2008, eight localities in the Metropolitan Area were classified as having a low development, but until 2014 only Aiton remained in this category.

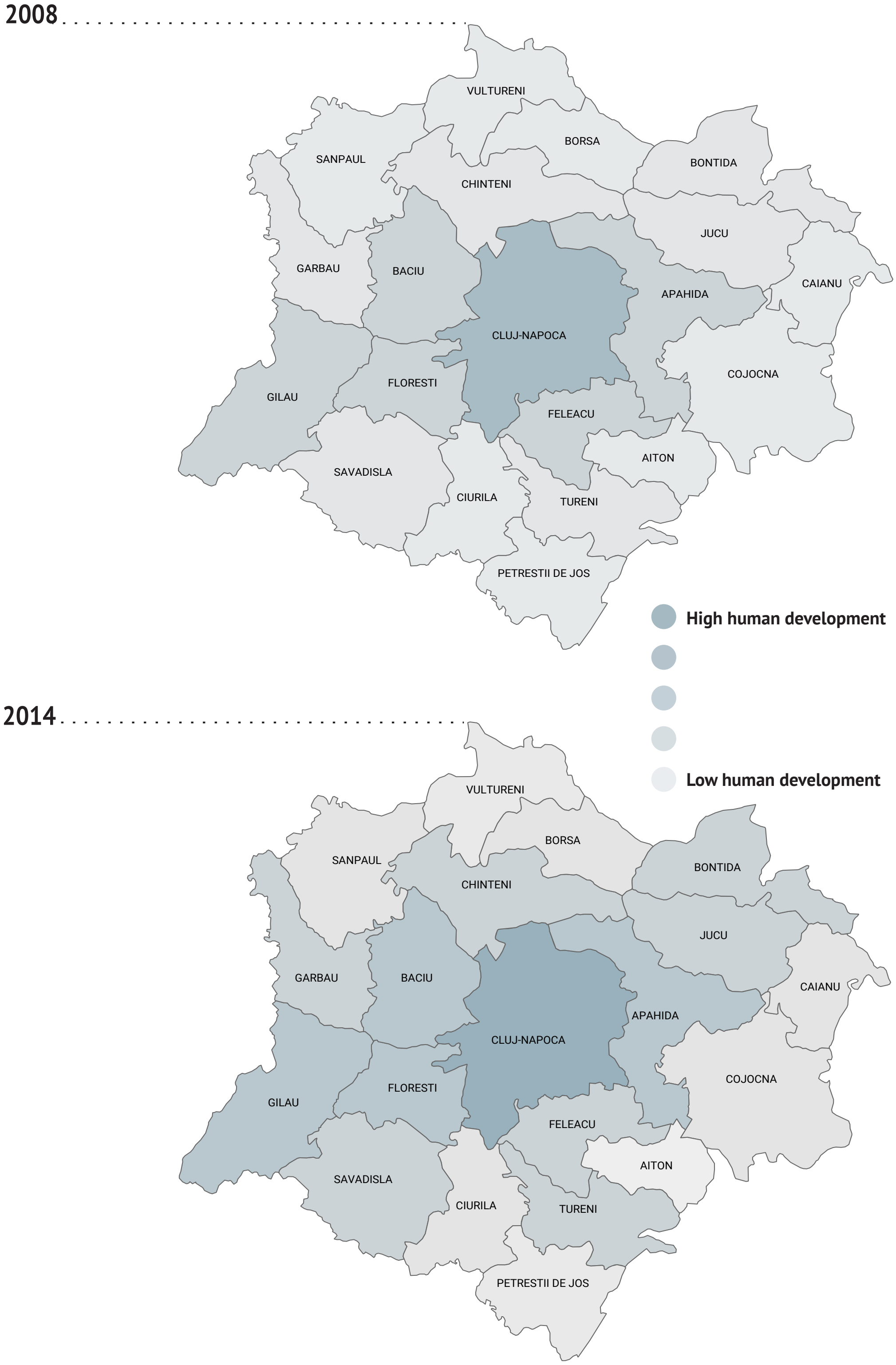
In 2008, seven Metropolitan localities had medium to low development, and in 2014 they were all classified as having average development.

Four localities have a medium to high development ranking: Gilău, Florești, Baciu, Apahida and Feleacul and, in 2008, they were ranked as medium development.

First ring localities have a high development potential and they are a work pool resource for the entire area. Localities in the West of the city such as Florești and Baciu are a reserve for a highly educated labour force, while localities in the West of the city such as Apahida and Jucu are a reserve of labour force with secondary school education.

FIGURE 34.

Local Human Development Index, 2008 and 2014, Cluj Metropolitan Area



Data source: Sandu (2008), Sandu (2014).

Technical data: Using ranking scores the data at village level were aggregated at territorial administrative unit level and then they were transformed in the closest ordinal category.

The Labour Market In Growth Poles

PROFESSIONAL AND OCCUPATIONAL CATEGORIES IN URBAN POLES

The composition of the workforce in terms of occupation is one of the key indicators that determine a city's degree of globalization.

— More leadership and management positions indicate that the urban centre has a command role and economic and political control. Global cities concentrate a significant number of such positions that help manage transnational capital networks.

— A high number of specialists indicate a significant concentration of service activities for global companies, either for mobile capital location and relocation activities, or for outsourcing business activities. The three most strongly outsourced global activities are: (a) Information & Communications Technology (b) Business Support Services, (c) Engineering, Research & Development.

In all contemporary rankings, Bucharest is a global city; however, it has a significant regional influence in Eastern and Central Europe.

— More than a quarter of all Romanian managers and a fifth of all specialist live in Bucharest, which is not surprising as it is the largest city in Romania with a population of around 2 million people (plus the 400 thousand that live in Ilfov), 9.3% of the country's population. However, the share of management and specialists positions is very high, 3 times higher in relation to the size of the capital.

— Most of Romania's aggregate revenue is from Bucharest. However, in the last ten years the percentage dropped from 65% in 2008 to 44% in 2018, in favour of other Romanian cities, particularly Cluj- Napoca, Iași and Timișoara.

Cities such as Cluj-Napoca, Iași and Timișoara concentrate around 1.5 – 1.6% of Romania's population, with around 330 thousand inhabitants. Each of these cities contributes to global capital flows, which has effects on social composition.

— However, here too there is a high relative disproportion of managers and specialists in relation to the population. Each of these cities concentrates between 2.9 and 3.8% of the total managers and 3.2-3.8% of the total specialists in the country, i.e. double and even triple in relation to the city size.

— In all three cities, one in three employees is a specialist. In the rest of the growth poles, Constanța, Craiova, Brașov and Ploiești only one in five employees is a specialist. Cluj-Napoca concentrates the highest number of managers and specialists after Bucharest, both in terms of absolute value and as share of its population. Most of the specialists in Cluj-Napoca work in outsourcing sectors.

— Another important resource for the recruitment of new specialists and managerial talent are students. In Iași and Timișoara they represent 11-13% of the population. Cluj-Napoca had an advance over these cities with 77 thousand students in the 2018-2019 academic year. Due to its size, Bucharest has a lower percentage of students, respectively 5% of the population.

FIGURE 35.

Occupational categories by the total number of employees in each growth pole, 2018

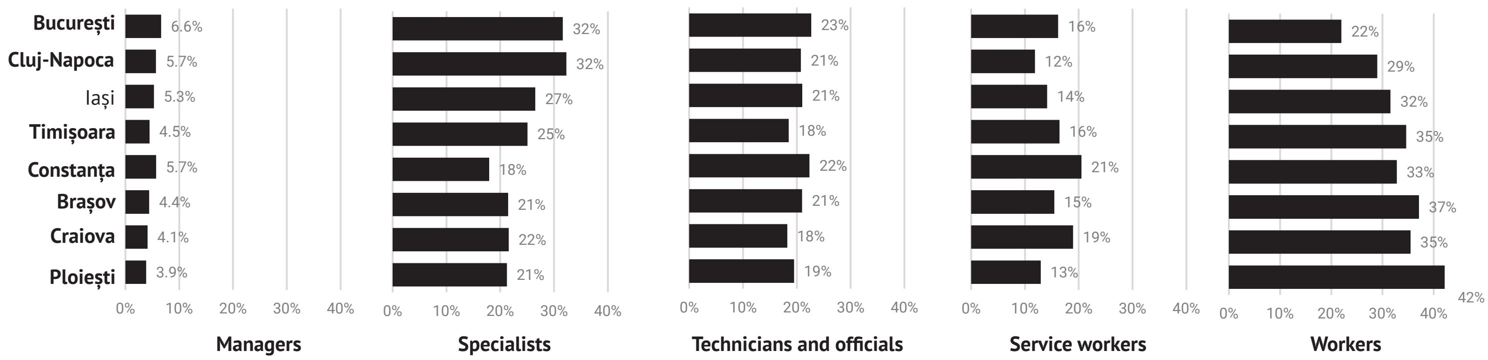
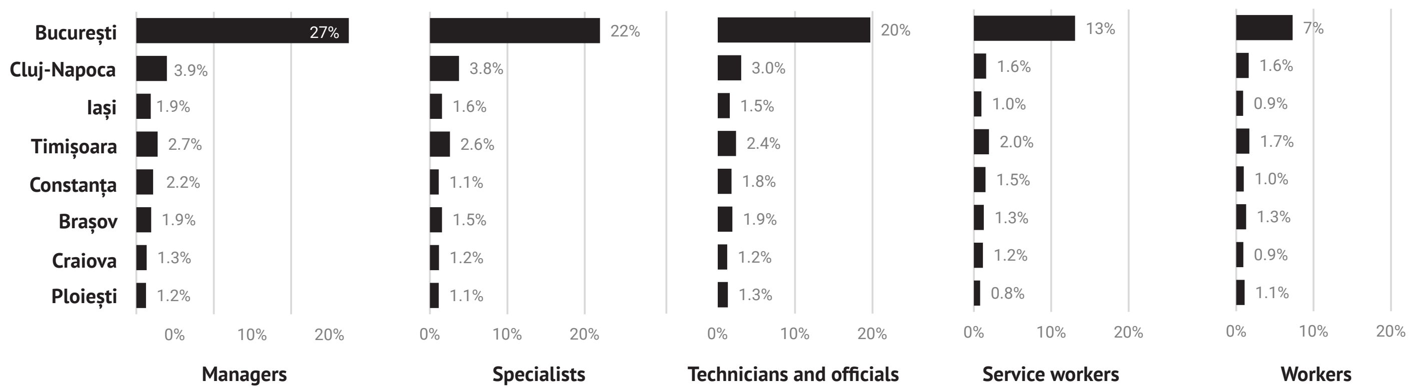


FIGURE 36.

Occupational categories by the total number of employees in that category in each growth pole, 2018



Data sources: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro.; Population and Housing Census, 2011.

Technical data: We calculated the distribution per occupational categories using the 2018 employees' distribution by national economy activities in the balance sheets and the distribution of occupations by activity in each growth pole in the 2011 census.

EMPLOYEES PER ACTIVITIES IN URBAN POLES

Cluj-Napoca, Timișoara and Iași have regional polarizing roles and operate in different regional urban command and control centres.

By comparison, Cluj-Napoca has the highest number of employees in services from the total number of employees. Moreover, in the last decade this sector registered a constant growth.

Iași had a similar increase in the number of employees in private services and it capitalized on the competitive advantage given by cheaper labour on global markets and in relation to the Romanian labour market. Iași is in an economic niche similar to Cluj-Napoca.

In Timișoara the service sector had a moderate growth. The city's economic profile combines the economic sectors in similar proportions. Agricultural and industrial activities in Timiș and Arad County are predominant.

The other growth areas have different types of economic specializations. Constanța is a port-city and key urban centre specializing in exports of goods. Its service sector does not have the same structuring effect on the economy. Ploiești is a productive urban centre strongly connected to the service economy in Bucharest.

In addition, the industrial sectors are very important for the local economy, as in the case of Brașov and Craiova. Proportionally, hospitality services are more developed in Brașov due to summer tourism. Cluj-Napoca has the highest number of employees in hospitality in absolute values. Craiova is specialized in agriculture and it coordinates the regional agricultural activity.

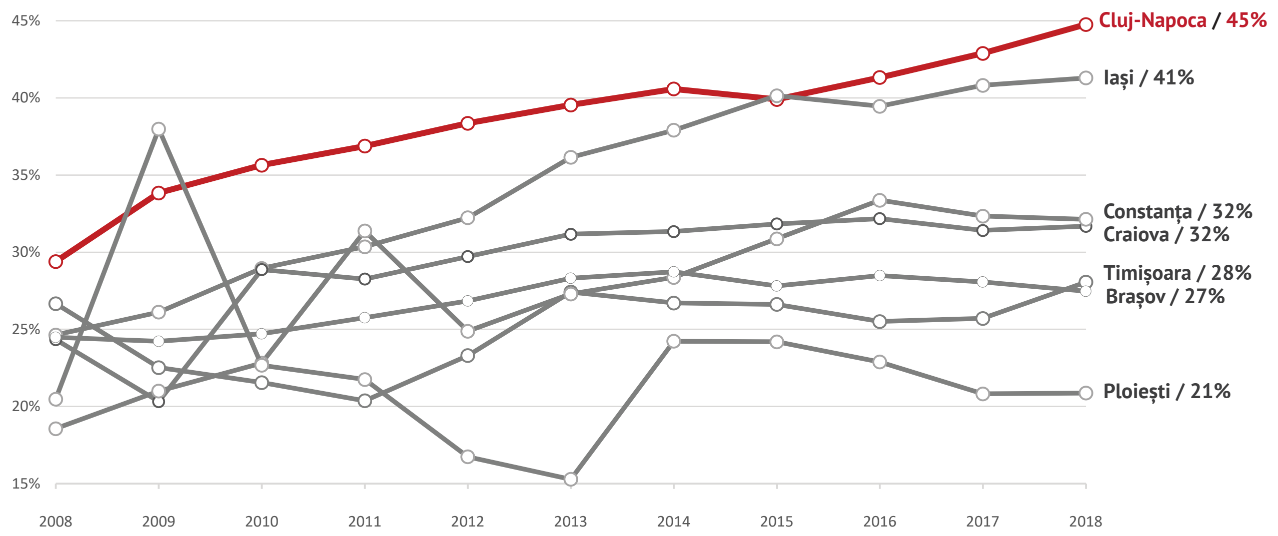
In terms of specialization in the service sector, there are significant differences between cities.

The most developed private sectors in services in Cluj-Napoca are those specific to the global outsourcing economy: Information & Communications Technology, Business Support Services, Engineering, Research & Development. In addition, the financial sector is also a key sector in the local ecosystem. At the same time, there are a series of service subsectors that support globalized business activities and provide a favorable urban environment for employees and employers.

Iași and Cluj-Napoca have a similar profile; however, the above mentioned sectors have lower absolute values in Iași. The major difference is that Iași does not have an autonomous financial sector.

Proportionately, in Timișoara, the global outsourced sectors are bigger than in Cluj-Napoca because of the smaller size of the service sector in the local economy. The number of employees in 2018 in Information Technology is relatively different in the three cities: 22.1 thousand employees in Cluj-Napoca; 11.2 thousand in Timișoara and 6.8 thousand in Iași.

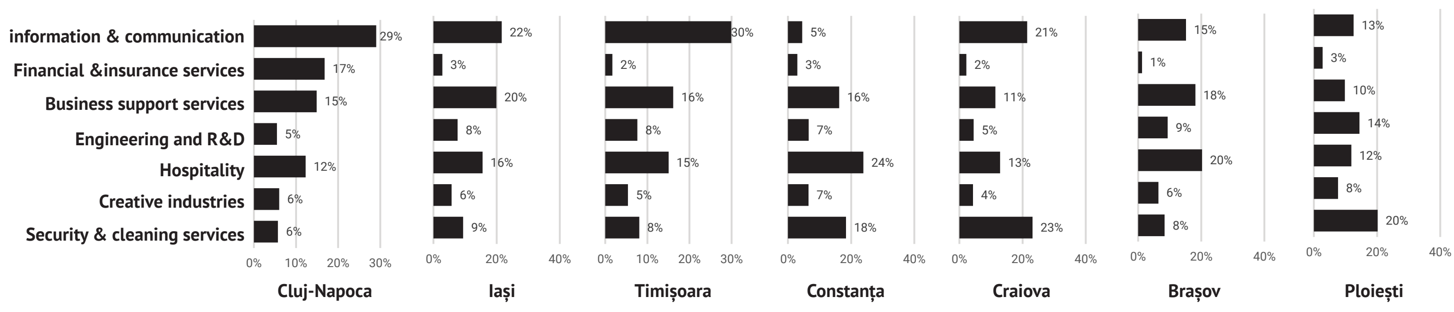
FIGURE 37.
Employment in services of total employment in the growth poles, 2018



Data source: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro.

Technical data: The reporting basis represents the aggregated employees in each city as reported in the balance sheets of companies in 2018; for each city the values are as follows: Brasov – 93753; Cluj-Napoca – 151241; Constanta – 82392; Craiova – 70012; Iasi – 76493; Ploiesti – 69818; Timisoara- 133607.

FIGURE 38.
Employment in key service subsectors of total employment in services in the growth poles 2018



Data source: Balance Sheets of Economic Operators, 2008-2018, Ministry of Public Finance, Data.Gov.Ro.

Technical data: We selected (a) the subsectors strongly correlated with global outsourcing flows and (b) the subsectors that offer services to capital of employees in these sectors.

AN ENTREPRENEURIAL MUNICIPALITY

Between 2008-2018 the Cluj Metropolitan Area has consistently connected to the global outsourcing economy. This allowed the local economy to internationalize and to grow through multiplier effects that in turn have generated local markets. However, in terms of sustainability, this growth model comes with a series of challenges, and this type of participation in global capital flows has inherent limits.

— Most of the profits are exported to company headquarters, the locally invoiced values are relatively low compared to the global sale price of the labour force employed in knowledge based sectors in Cluj-Napoca, and the intellectual property rights favour the registration of patents and innovations outside Romania.

— Thus, although the information technology sector has a higher added value compared to the industrial sector, it is impacted more by the repatriation of profits and the relatively modest financial impact at source, as the paradigm of dependent development has a greater impact on the new economy.

— Compared to the national economy, the Cluj Metropolitan Area is a talent pool for the following knowledge-intensive fields: health, academic research, creative industries and information and communication technologies. There is also a highly developed business support sector that possesses the complex organizational knowledge needed to streamline economic activities. The growth of these sectors is an important advantage when it comes to economic vitality; however, companies within these economic areas operate as shared service centres connected to global parent companies.

— A direct connection of these key areas in supplier and product collaboration chains implies very high costs because they are indirectly connected through European research, service and production capitals.

— Transnational capitals do not favour the formation of complex local value chains that would allow them to seize a higher local gross value added. A rich empirical literature shows that the spillover effects from global value chains to local companies are much lower than previously thought.

— Local opportunity costs are too high for the economic actors in Cluj-Napoca to allocate resources for developing economic ecosystems that would allow a stable technological development and the derivation of technological rents.

However, employers' and managerial associations organized in economic clusters, strive to create circular economies by connecting suppliers in different economic fields and developing advanced products for continental and global markets. Nevertheless, economic actors operating in the Cluj Metropolitan Areas grasp the limits of these business models and the contradictions they generate. In 2019, the efforts of the employers' associations, clustered in various innovative partnership structures, aimed at:

A. providing talent for object design within the creative industries,
B. providing software for digitalization within the information technology industry,

C. the manufacture industries, such as furniture, to use these resources to make marketable products on national, and possibly global level.

In turn, the process of economic interconnection between these various fields comes with a number of contradictions that make collaborations challenging.

—— Many internationalized companies have survived thanks to the mass production of components for global chains. However, this makes them captive and they rarely have the ability to develop goods connected through digitized production technologies or to provide independent services on global markets by using organizational cost reduction technologies through local business support services.

—— In the case of local companies oriented towards customers that represent other corporations, the new technologies for connected objects and remote-control software put major pressure on growth. Besides some substantial resources available in the local ecosystem, autonomous growth becomes problematic and growing local companies are acquired by European or global prayers.

—— The clientele of domestic companies oriented towards final consumers is made of employees working in multinational companies, usually consumers located in the Cluj Metropolitan Area. As long as there is growth in the Metropolitan Area, there is relatively little pressure on this sector to expand on global markets.
Due to the cumulative effect of these businesses dynamic in the local ecosystem, real estate investments are an important method of fixing capital in the Cluj Metropolitan Area.

—— The city and its metropolitan area have become growth resources through the construction market, as they serve both the housing needs of the workforce who have a wage above the national average, as well as the needs for productive spaces for transnational capital.

—— An entire speculative field has emerged that coordinates both the housing market and the business infrastructure market, which consists of companies that mediate and coordinate business processes in the construction sector, but whose labour costs were outsourced to other companies in the field.

—— The result is a city that is becoming too expensive for many of the labour contingents needed by the city, increasing pressure on suburbanization, which in turn generates traffic and decreases the quality of life in the Metropolitan Area, and last but not least, a reduced productivity due to a challenging commute.

—— The undesired side effects are not related to this dynamic or even speculative market, they are due to the lack of regulation of the construction and real estate market which would allow all inhabitants of the Metropolitan Area to access goods on this market. This has aggregate chain effects that impact the labour and talent market, but mostly they impact the quality of life (pollution, heavy traffic, time spent in traffic).

1. Technological rents. Public investments in risky and relatively expensive infrastructure and research that could shape future technology markets are made possible by an entrepreneurial state. It is often expected of the private

role of the state in generating advanced technologies is central, which is obvious both in the case of Silicon Valley and in the 'technical corridors' in Western Europe and Asia (Mazzucato 2018). The concept of entrepreneurial state has begun to migrate towards smaller administrative units, such as regions and large cities; therefore, by extension, we have the concept of entrepreneurial municipality (Cooke, Schwartz 2008; Shearmur, Poirier 2017; Parraonchi 2019).

Companies located in Cluj-Napoca produce technologies for global markets, however, they cannot locate technological rents in the metropolitan economy since patents are registered by their parent company. An entrepreneurial municipality has relatively few direct tools to shape these types of dynamics. However, it has a number of indirect tools to stimulate research and the development of locally registered technologies.

A. The most important indirect tools are linked to real estate: offices in industrial parks owned by public authorities, building permits, approvals from local institutions, affordable housing for employees, property taxes. These tools can be used in exchange for a biannual (or whenever necessary) audit in order to facilitate the local registration of technologies.

B. Another set of indirect tools are related to brokerage of talent and resources in the local ecosystem, which allows the provision of legal advice for patent registration. Another tool is the reduction of transaction costs by assuming a part of the collaboration risks by financing public-private consortia. Research and development in Central and Eastern Europe had a positive evolution only where there was a strong institutional context that helped reduce the collaboration risks (Santangelo, Meyer, and Jindra 2016).

C. The entrepreneurial municipality can indirectly facilitate the creation of technological rents by investing in the necessary infrastructure for connected products: public data, storage, open access, data standardization protocols and differentiated access according to interest. An open data platform in Cluj-Napoca and metropolitan communes, with high granularity and time series with frequent readings of the city's sensor system (IoT) is an opportunity to transform Cluj-Napoca from a technology consumer into a local producer for global connected technology markets.

2. Semi-public/semi-private mediating institutions for creating technological rents. Cluj-Napoca has a very large health and university education sector, mostly publicly owned. It also has a very large information technology sector, business support services and engineering, mostly privately owned.

These sectors are often uncoordinated and fail to seize collaboration opportunities. The entrepreneurial municipality can connect them and hence generate hitherto unexplored network effects. Cluj-Napoca has experimented with institutional forms in which professionals and entrepreneurs receive public support in semi-public/semi-private organizations.

— An example of good practice is the Cluj Cultural Centre, where professionals in the field of culture and urban development seize local and global opportunities. The members of the Cluj Cultural Centre, alongside cultural institutions and organizations, are universities and business clusters in the city, the Cluj-Napoca City Hall

and Cluj County Council. Key specialists in the field play an essential role in developing the projects of such a public-private initiative, therefore public institutions can facilitate experimentation instead of blocking it through hyper-regulation.

—— Similar forms can be used to create a common institutional space, in which entrepreneurial talents working in information technology are supported in publicly owned organizations, in order to shape the formation of connections in the local ecosystem for a cluster of nano-bio-info technology.

—— This organization would have four major missions: (1) to generate connections between sectors and to finance technological experiments, possibly by co-participating in the initial investment in exchange for shares in technology start-ups, (2) to experiment with new concepts, while taking the risk that the technology might be impossible to monetize, (3) to mediate partnerships with strategic global partners to generate local ecosystems with high local added value, different from the dominant technological lohn, (4) to ensure the establishment of a technological innovation fund that would capture revenue from royalties generated by the technologies developed through activities encouraged by the municipality.

3. Local institutions with global openness. Cluj-Napoca managed to attract a large number of talents from all over Transylvania through the public system of universities, and it managed to retain said talent through the labour market. However, the rescaling of the city could also be facilitated by expanding the areas of talent recruitment, by attracting international specialists in top fields to stimulate the formulation of new technologies. There needs to be an entire public institutional system for relocating the workforce. The relocation costs increase significantly for a family of international specialists with several children, whose initial income is that of one adult. The system involves both an internationalized office for facilitating the access to the labour market, and a public school system specialized in foreign languages (English and Latin based languages) for expats. Currently, only the private system offers the possibility of education in the English language in Cluj-Napoca, which increases relocation costs and hence only managers have the possibility of temporary or permanent immigration.

4. Local regulation of the real estate market. The city's major resources come from property taxation and the local retention of the value added tax. It is possible to create a complex internal market through multiplier effects by urbanizing people and capital. One of the greatest challenges the city faces is its capacity to urbanize families who are made up of people with tertiary education, as well as the urbanization of capital in services by fixing it in a multi-centric city logic.

—— Up until this moment, talents working in the new economy have relocated in first ring localities around Cluj-Napoca. A complex labour market also requires the urbanization of a complex layer of talent, not just those working in sectors directly connected to global capital flows. It is also possible to have a dynamic market though manual labourers that can afford to live in the city. Cluj-Napoca City Hall has started the process of facilitating a new neighbourhood called Sopor, capable of accommodating about 50 thousand people. This effort must continue to be sustained in the future, and it must become a priority in order to provide an adequate volume of housing, public services and sustainable infrastructure that can accommodate its inhabitants, provide clean mobility and high living costs for the workforce of the new expanding economy.

—— The new economy can develop in parallel with the emergence of an increasingly consistent layer of people excluded from the benefits of new economies through real estate market mechanisms (Florida 2018). This type of development is called ‘the silicone value trap’ (Margit Mayer 2016) or ‘platform urbanism’ (Means 2019). At county level, there is a need for a legislative package that would allow transferring a share of the privately built housing to the public domain, or rent control, and also to establish an agency that would administer this new housing fund. Cluj-Napoca City Hall will be able to support and adopt a parallel legislation at local level. (a) This would help build a fund of affordable housing offered by the state on the free market. (b) Separately, there will also be a social housing fund for vulnerable people. These measures will allow the local authorities to shape the local housing market that will no longer be at the discretion of real estate whims and hedge funds.

—— A city of talents must offer the possibility of a public consumption of space through appropriate urbanization, including advanced public transport and cycling, as well as educational, cultural and sports facilities (Dannestam 2008; Margalit and Alfasi 2016). In the last decade, Cluj-Napoca has had a very important history of opening new public spaces and new institutions, however, the new urbanization needs to generate an improved quality of urban life based on the best practices in cities that ranked in the Top Most Liveable Cities. Talents are attracted by the private sector, but the quality of life keeps them in the city on medium and long term. A high quality of life must be sustained by the increasing consumption of public goods.

—— In order to avoid a speculative business infrastructure, Cluj-Napoca can urbanize capital in services by fixing them in a multi-centric city logic. Here are some examples of public projects that can produce a polycentric infrastructure: (a) the STEAM pole in Dealul Lombului, concentrating a new shared university campus, a science museum and a cultural scene; (b) using TetaPolis for research and technology transfer activities through an adequate funding of research projects and the internalization of access to these research funds; (c) the Cluj Regional Monobloc Emergency Hospital in Florești is an opportunity to establish a new centre for service functions to attract service activities closer to the spatially concentrated higher education workforce in Florești; (d) the Monobloc Children’s Hospital in Borhanci would help urbanize the area and allow a structured development of the new neighbourhood; (e) a new site of the ‘Gheorghe Dima’ Music Academy will provide a new cultural space for those living in Mănăștur and Florești.

LIST OF DATA SOURCES

CLUJ COUNTY DIRECTORATE OF STATISTICS

2019. List of active employers with active employees in Cluj County, in 2018.
2019. Top 100 exporters in Cluj County, in 2018.
2019. Top 100 importers in Cluj County, in 2018.

EUROSTAT

2019. [bd_9bd_sz_cl_r2] Business demography by size class 2004-2017
2019. [demo_gind] Population change: Demographic balance and crude rates at national level 2004-2018.
2019. [met_10r_3gdp] Gross domestic product (GDP) at current market prices by metropolitan regions, 2013-2017
2019. [nama_10r_3gva] Gross value added at basic prices by NUTS 3, 2013-2017

NATIONAL INSTITUTE OF STATISTICS, TEMPO

2019. ART121A, Staff employed in libraries, by locality, 2011-2018
2019. ART122A, Staff employed in entertainment companies and institutions, by locality, 2011-2018.
2019. ART123A, Staff employed in museums, by locality, 2011-2018.
2019. CDP103E, Employees in research-development, by county, 2008-2018. 2019. CON103I, GDP by macro-regions, development regions and counties, 2008-2017.
2019. EXP101J – Exports by counties and by sections/chapters of the Combined Nomenclature, 2018.
2019. EXP102J – Imports by counties and by sections/chapters of the Combined Nomenclature, 2018.
2019. FOM104D, Average number of employees by locality, 2008-2019.
2019. INT110A, Active companies, by activities of national economy at section level and by legal forms, 2008-2017.
2019. POP107D, Population by domicile on January 1st, by locality,, 2008-2019.
2019. SAN104B, Medical staff by category, ownership, and locality, 2008-2018
2019. SCL104D, Teaching stuff by education level, by locality, 2008-2018
2019. SOM101E, Unemployed registered at the end of the month, by locality, 2010-2019. 2019. SOM101F, Share of the unemployed registered at the end of the month in the total work resources, by locality, 2010-2019.
2019.RSI101A, Active companies, average number of employees and turnover by activities of national economy, 2015-2018.

NATIONAL INSTITUTE OF STATISTICS, POPULATION AND HOUSING CENSUS, 2011.

2011. Data aggregated at folder level for Cluj County.

MINISTRY OF PUBLIC FINANCE

2019. Balance Sheets of Economic Operators, 2008-2018, Data.Gov.Ro.

NATIONAL TRADE REGISTER OFFICE

2019. Companies registered with the Trade Register, 1991-2018, Data.Gov.Ro.
2018. Companies cancelled from the Trade Register, 1991-2018, Data.Gov.Ro.

ECONOMIC DATA INTEGRATION

We have used public data from multiple sources, and the institutions that published the data are recognized as their custodians. The custodians have no commercial interest or conflict of interest in relation to the data and we have no knowledge of how they collected and managed the data in accordance with certain quality standards.

Micro-data. The analyses used micro data at company level, where possible:

— The financial data of companies are taken from the yearly reports published by the Ministry of Public Finance, from 2008 to 2018, as a result of the obligations of annual reporting of balance sheets by Romanian companies.

— The identification data of companies were taken from the periodical publications of the National Trade Register Office, both for active and inactive companies.

— Data from the Ministry of Public Finance and the National Trade Register Office have been integrated into a single database to allow comparisons.

— The identification data of organizations and the volume of employees in December 2018 were taken from the Cluj County Statistical Division.

— The socio-demographic data of employees are only collected during the census and they are made available by the National Institute of Statistics (NIS) on-demand.

Macro-Data. The analyses used aggregate data at county, national and European level, if such granulation was necessary for the analysis.

— For aggregated data at locality and county levels, the NIS was used as a source. EuroStat was used for European comparative data.

— Some economic indicators, such as the Gross Domestic Product or the Gross Value Added, are microeconomic derivatives related to national accounts. Both NIS and EuroStat were used as sources for such data.

Accuracy. We have made every effort to ensure the comprehensives, accuracy and usefulness of the data used and presented in this material.

— We consider that the data collected accurately describe the phenomena they measure, monitor or report. However, we are aware that there are some issue within the micro data used: the failure to report balance sheet data, failure to report the financial data of branches, or reporting data in the locality where the company is registered, even if a significant part of the activity is carried out in the Cluj Metropolitan Area. Nonetheless, we are not the creators of the data presented and if there are systematic omissions and inaccuracies in the data, we are not aware of them.

Corrections. At the level of micro-data for companies' balance sheets three types of major corrections were made.

—— The data used were subject to a quality assurance process, such as checking for possible errors at each stage in the data collection and processing, as well as the necessary adjustments or corrections. The authors did not make any adjustments or changes that might impact the validity of the data.

—— The first was to individually correct the number of employees reported at locality level for the top 20 companies in the Cluj metropolitan Area for 2018. Since some companies are regional and national employers, the entire volume of employees was reported in Cluj-Napoca. Companies were contacted individually, or official company documents were used to make the necessary adjustments to the number of employees.

—— The second correction was to enter the balance sheet information for companies headquartered in other localities in Romania, notably in Bucharest, in the data tables for 2018 for the Tetarom III industrial platform in Jucu. In addition, for the work points registered in the Cluj Metropolitan Area where data were missing, the economic balance sheets were assigned in proportion to the number of active employees in the Metropolitan Area.

—— As a third correction we did some exclusions and reclassifications for certain analyses:

a) In 2015, Banca Transilvania had a net profit that also included the value with which Volksbank Romania was acquired, therefore we excluded the 1.651 million lei acquisition value from the 2.418 million lei income. The correction was important for the time series of private revenues of the entire service sector.

b) We excluded the company Enka Development (Unique registration code:16215260) from the sector analysis because the balance sheet for the period 2010-2013 were very different from the average in the construction sector in the Cluj Metropolitan Area. The company was part of the construction consortium building the Transylvania Highway and it ceased to operate in 2013, following the investigation conducted by the National Anti-Corruption Directorate at the request of the Prime Minister's Control Corps.

c) For the sectoral analysis, for 2011-2013 we reclassified two companies (Unique registration code 21225731, Unique registration code 22951490) starting from their assets. They were registered in the agricultural sector, but they were very different from the balance sheets of the sector.

REFERENCES

Cooke, Philip și Dafna Schwartz. 2008. „Creative regions: an introduction” în Cooke, Philip și Dafna Schwartz (coord) *Creative regions: technology, culture and knowledge entrepreneurship, pp. 1-20*. Londra și New York: Routledge.

Dannestam, Tove. 2008. „Rethinking Local Politics: Towards a Cultural Political Economy of Entrepreneurial Cities.” *Space and Polity* 12 (3): 353–72.

Dustmann, Christian, Bernd Fitzenberger, Uta Schönberg și Alexandra Spitz-Oener. 2014. „From Sick Man of Europe to Economic Superstar: Germany’s Resurgent Economy.” Journal of Economic Perspectives 28 (1): 167–88.

Florida, Richard L. 2018. *The New Urban Crisis : How Our Cities Are Increasing Inequality, Deepening Segregation, and Failing the Middle Class-- and What We Can Do about It*. New York: Basic Books.

ITech Transilvania Cluster. 2016. „Industria IT in Romania.” Cluj: ARIES.

Margalit, Talia, and Nurit Alfasi. 2016. „The Undercurrents of Entrepreneurial Development: Impressions from a Globalizing City.” *Environment and Planning A: Economy and Space* 48 (10): 1967–87.

Marin, Dalia. 2018. „Global Value Chains, Product Quality, and the Rise of Eastern Europe.” In Marin, Dalia (coord.) *Explaining Germany’s Exceptional Recovery*, 41–46. London: CEPR Press.

Marin, Dalia, Jan Schymik și Alexander Tarasov. 2018. „Trade in Tasks and the Organization of Firms.” *European Economic Review* 107 (August): 99–132.

Mayer, Margit. 2016. „Neoliberal Urbanism and Uprisings Across Europe.” In *Urban Uprisings. Palgrave Studies in European Political Sociology*, edited by M. Mayer, C. Thörn, and H. Thörn, 57–92. London: Palgrave Macmillan UK.

Mazzucato, Mariana. 2018. *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. London: Penguin Random House Books.

Means, Alexander J. 2019. „Platform Urbanism, Creativity, and the New Educational Futurism.” *Educational Theory* 69 (2): 205–23.

Oshri, Ilan, Julia Kotlarsky și Leslie Willcocks. 2015. *The Handbook of Global Outsourcing and Offshoring: The Definitive Guide to Strategy and Operations*. 3. ed. Basingstoke: Palgrave Macmillan.

Parronchi, Pietro. 2019. „Entrepreneurial Municipality: Diffusion and Decentralization of Innovation As a Driver of Economic Growth." 31st Annual Meeting. SASE;

Pavlínek, Petr. 2019. „Restructuring and Internationalization of the European Automotive Industry.” *Journal of Economic Geography*, January, 1-33.

Peck, Jamie. 2018. *Offshore. Exploring the Worlds of Global Outsourcing*. Oxford: Oxford University Press.

Pierre Audoin Consultants. 2019**.** *Software and IT Services in Romania 2019*. București: Asociația Patronală a Industrie Software și servicii.

Sandu, Dumitru. 2008**.** Indicele Dezvoltării Umane Locale ca măsură globală a performanței investițiilor public, în Marcel Ionescu-Heroiu (coord.) I*dentification of project selection models for the regional operational program 2014-2020*, pp. 432-457. București: World Bank

Sandu, Dumitru. 2011**.** „Disparități Sociale în dezvoltarea și în politica regională din România.” *International Review of Social Research* 1 (1): 1–30.

Sandu, Dumitru. 2013. „A Local Human Development Approach to Defining Lagging Regions.” În Marcel Ionescu-Heroiu (coord.), *Competitive Cities: Reshaping the Economic Geography of Romania*, 100–111. București: World Bank.

Santangelo, Grazia D., Klaus E. Meyer și Bjoern Jindra. 2016. „MNE Subsidiaries’ Outsourcing and in Sourcing of R&D: The Role of Local Institutions.” *Global Strategy Journal* 6 (4): 247–68.

Sen, Amartya. 2001. *Development as Freedom*. Oxford: Oxford University Press.

Shearmur, Richard și Vincent Poirier. 2017. „Conceptualizing nonmarket municipal entrepreneurship: Everyday municipal innovation and the roles of metropolitan context, internal resources, and learning." *Urban affairs review* 53.4: 718-751.

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ISBN: 978-606-37-1044-5